ROUTLEDGE COMPANIONS

The Routledge Companion to the Future of Marketing

Edited by Luiz Moutinho, Enrique Bigné and Ajay K. Manrai

Every discipline needs to be re-examined in its fundamentals, given the huge impact of twenty-first-century globalization and technology on our global market, economy and society. Those of us in marketing are in the midst of a changing marketing paradigm, moving us from a concern with growth, to a concern with conservation and social justice. I hope that all marketers taste this rich soufflé of new ideas and add their own contributions.

Philip Kotler, *Kellogg School of Management, Northwestern University, USA*

This volume provides a futurist perspective to emerging topics in marketing, written by leading marketing scholars, including views on biomarketing, social media and digital connectivity, agent-based modeling and other new methodologies – even new ways of looking at marketing itself.

Anthony Di Benedetto, *Professor, Temple University, USA*

This book is a unique collection of the opinions on the future of marketing from some of the very best marketing researchers in the world!

Bernd Skiera, *Professor, University of Frankfurt, Germany*

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The Routledge Companion to the Future of Marketing

The face of marketing has changed substantially in the last few years. With more and more research conducted in marketing and consumer behaviour fields and technological breakthroughs occurring on a regular basis, the future of marketing is set to be very exciting.

Going beyond a state-of-the-art view of the discipline, this tome focuses on the advances being made in many different areas such as critical thinking, new paradigms, novel conceptualisations, as well as several technological breakthroughs with a direct impact on the theory and practice of marketing. Each chapter presents an analytical and engaging discussion of the topic, as well as introducing a specific research agenda paving the way for the future.

The Routledge Companion to the Future of Marketing provides the reader with a comprehensive set of visionary insights into the future of marketing. This prestige collection aims to challenge the mindset of academics, moving their thinking processes from current thinking into new perspectives and advances in marketing knowledge.

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Enrique Bigné is Professor of Marketing at the School of Economics, University of Valencia, Spain.

Ajay K. Manrai is Professor of Marketing at the Alfred Lerner School of Business, University of Delaware, USA.

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To all the academics and researchers with an interest in studying the future.
Luiz Moutinho

To Ana, Kike and Anita.
Enrique Bigné

To Lalita Manrai.
Ajay Manrai

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Preface

With the turn of the century, we have been witnessing a tremendous amount of change in our lives. The flux of change, the turbulence and the turmoil of a constantly renewed world is becoming difficult to anticipate and absorb. If one selects any dimension that is influencing and impacting on our lives – social values, technology, market structures, consumer behaviour, globalization, mobility, demographics, family orientation, politics, legislation, information, environment and sustainability, amongst many other factors – these are all transforming themselves and altering the living patterns of human beings.

As academics, we have a major remit of trying to advance theoretical and nomological knowledge which is designed to be relevant to all the stakeholders in society, as well as preparing organizations and companies for future changes in paradigm, new trends, new management orientations, new technologies, tools and techniques, so that they can anticipate the future and increase their level of preparedness and responsiveness to face up to all these challenges.

The ethos and purpose of this book is exactly following this orientation. We really wanted to assemble a vast array of topics that reflect new scholarly paradigms, new academic areas for exploration, new concepts, new techniques and new technologies.

We have also invited some of the most prominent names in academic marketing to put forward their views, dissect new challenges, introduce unconventional ideas and use the book as a "testing ground" to thought-provoke the minds of our academic peers. Following these premises, we have received very valuable insights and mind-stretching contributions! The themes and specific topics presented in the book covered areas such as: new paradigmatic views about the future of marketing; new philosophical insights; the formation of new theoretical building blocks; new organizational formats such as integrated and process-based management; the emergence of neuroscience, endocrinology and genetics in marketing; neurophilosophy of explanation in consumer research; autobiographic and semantic memories; the resurgence of eye-tracking research; future challenges in customer relationships; unconventional marketing and the customer-made paradigm shift; the future role of social media and brand engagement; the future of pricing and digital markets; the new domain of computer–human interaction; the critical dyad of internet technology and digital brand management; the relevant and innovative role played by memetics; a new statistical approach beyond structural equation modeling – confirmatory tetrad analysis; agent-based modelling; the renewed and new use of evolutionary algorithms in marketing-genetic algorithms, memetic algorithms and electromagnetism-like algorithms, and futures research methodologies, among other topics.

Jerry Wind has written a provocative opening chapter, "Toward a new marketing paradigm" that sets the stage for the other chapters in this volume. Wind argues that the increasing importance of the segments of empowered and skeptical consumers coupled with the enormous advances in science and technology, and the challenging and changing socioeconomic realities

around the world have resulted in increased complexity and uncertainty in doing business, which necessitates re-evaluation of traditional mental models and the adaptation of new mental models. He provides several examples of companies, such as Apple, Facebook, FedEx, Google, Starbucks, Tata Nano, YouTube and many more which have challenged and successfully changed mental models of the industries in which they operate by introducing breakthrough innovations. Specifically, the chapter delivers on the following three objectives: it (a) provides a brief discussion on the reasons for the need to challenge the current mental models of marketing, (b) proposes a new paradigms for marketing strategy, advertising and marketing research, and (c) outlines ways to implement new mental models of marketing.

Chapter 2, "New philosophical paradigms in marketing: from amoral consumerism to axiological societing" by George Panigyrakis and Anna Zarkada suggests that consumerism, today's dominant ideology, has led to overemphasis on individual desires at the expense of social values and that consumption is not being held responsible for collective welfare and the achievement of social objectives. Specifically, the chapter seeks to outline the implications of the economic crisis in the 2010s and the possible effects for the future of consumerism as well as the marketing discipline. The chapter points out that the philosophical issues are getting more and more distant from entrepreneurial practices and the current crisis could be seen as a unique opportunity both for consumers to reassess their consuming habits and for multinationals to reconsider the effects of their practices. Now, more than ever, it argues, economics is seen as capable of, as well as responsible for, the peace to which business can contribute by fostering economic development through nourishing a sense of community and citizenship. The authors are hopeful that marketing can act as a cornerstone in this new paradigm, promoting and fostering these ideals.

Justice is a universal concept that encompasses all areas of life, including commercial exchanges. In Chapter 3, Anna S. Mattila adopts this concept in the marketing context as perceived fairness, emphasizing the personal belief of clients through the three-dimensional views of justice. The impact of fairness in the context of service recovery efforts has received a lot of attention from researchers, nonetheless recent innovations and concepts are brought into the arena of relationships and communal exchanges. She discusses the social impact of justice in terms of relationship norms and third-party justice. The different pricing strategies and their impact on perceived fairness are also analyzed. Since culture is a key driver of fairness perception, the chapter ends with a discussion on the role of culture in shaping consumers' fairness perception.

Tarek Mady, Ajay Manrai and Lalita Manrai wrote a thought-provoking Chapter 4 on "Process based marketing management" (PBM2). They point to a large body of evidence suggesting that improved inter-functional dynamics are positively linked to enhanced firm performance, and that marketing is expected and encouraged to take a lead role as improved inter-functional interfaces are developed within organizations, such as, between marketing and sales, R&D, logistics, manufacturing/operations, human resources, finance/accounting and others. The chapter provides evidence to support the conjecture that in order to truly impact firm performance, such inter-functional linkages must go beyond short-term inter-functional teams typically formed to conduct a specific task or achieve a one-off common goal. What is required, they point out, is a more enduring philosophy which promotes cooperation amongst the various functions within an organization and would result in the absorption of marketing and marketing concepts such as "customer first" into the everyday planning and strategic goals of the various non-marketing functions within the organization. Specifically, the chapter provides a discussion of (i) the market orientation and that of the different perspectives of interface outlined in the literature, (ii) the relevant marketing and non-marketing literature

focusing on the various interfaces with marketing, and (iii) techniques and tools facilitating and improving interface across organizational functions.

Chapter 5, "Future of theorizing in marketing: increasing contribution by bridging theory and practice," by Roderick J. Brodie, points out the gap between the academic research published, and the needs of marketing executives. This chapter provides critical thinking and exploration of the future of theorizing in marketing, by introducing middle range theory (MRT) into the theorizing process. The MRT theorizing process used by the contemporary marketing practices (CMP) research programme enabled the development of a comprehensive typology that could investigate multiple practices empirically. To elaborate on the MRT process, three applications based on the author's recent work are examined. The first outlines the development of a typology of market and marketing practices. The second application outlines how CMP typology was used to investigate the general theoretical framework of the Service Dominant logic empirically. In the third application the MRT process was used to define the emerging concept of customer engagement.

Chapter 6, "Biomarketing: an emerging paradigm linking neuroscience, endocrinology, and genetics to buyer–seller behavior" by Richard Bagozzi and Willem Verbeke explores novel applications of human biological systems, especially as manifest in neurological, hormonal, and genetic processes to buyer–seller interactions. After reviewing extant research and discussing strengths and limitations, the authors introduce a new perspective for thinking about buyer–seller interactions which is grounded in recent, revolutionary advances in biology. The chapter brings together novel, unfamiliar theories and research from biology with contemporary frameworks and findings from marketing to propose a new agenda for the study of buyer–seller interactions. The authors show that the research to date in marketing raises important issues for study and has done much to frame managerial questions but does not provide as comprehensive and deep a perspective as biological approaches. Specifically, the chapter (i) provides a historical overview of research into buyer–seller behavior with an aim toward building on the wealth of findings to date and pointing to needed developments and opportunities, (ii) introduces key concepts, assumptions, and findings in neurobiology, especially as they apply to social interactions, and (iii) summarizes emerging research done in marketing on biomarketing, and identifies directions for future research into the investigation of buyer–seller interactions.

In Chapter 7, Gordon Foxall emphasizes the need to ascertain the future of marketing in a solid and evidence-based path supported by neuroscience. His chapter delves into the metatheoretical explanation of human behavior, which the author argues rests upon the critical role of neuroscience. Cognitive language and explanation are here seen as critical pillars of economic psychology. This is approached through the explication of a theory of normal and addictive consumer behavior (the competing neuro-behavioural decision systems hypothesis). The neural foundations of behavior are presented as a means of circumscribing the cognitive interpretation of choice. Foxall concludes by highlighting the fundamental roles of neuroeconomics and picoeconomics in explaining human behavior in the realm of consumption.

Ratnayake and Broderick introduce a compelling discussion on autobiographic episodes (AM), semantic memories and branding in Chapter 8. Consumer research is limited in its consideration of the separate memory systems conceptualization dominant in psychology, and rather has primarily focused on semantic forms of memory. The authors argue that it is critical to integrate episodic AM into brand-related memory studies. They see affective, self-relevant brand episodes as brand-related autobiographic memory (BRAM), and the storage of abstract brand-related knowledge as brand-related semantic memory (BRSM). The authors discuss their research evidence which was based on a series of fMRI experiments. They found that brand memories are stored in AM and semantic memory. Brand memories that are encapsulated in AM

are emotion-laden and self-relevant. The chapter makes a useful contribution to the understanding of multiple memory systems.

Chapter 9, "Looking at vision: eye/face/head tracking of consumers for improved marketing decisions" by Michel Wedel and Rik Pieters, explores the current research using different technological advances anchored in the eye-tracking approach. Tracking the eyes, head, and face of consumers can provide insights that cannot be obtained otherwise, and that can improve managerial decisions about marketing strategies and tactics. These methods have yielded several robust findings about attention to advertising and other marketing stimuli, as well as consumer choice decisions. The authors argue for an integration of methods and theories from vision, attention, Bayesian statistics and eye-tracking research in order to inform and further improve marketing decision making. New technologies such as webcam eye-tracking use webcams to remotely record emotions on respondent panels through facial recognition. The chapter ends with some of the newest applications that have been developed for smart-TV and smartphones.

Chapter 10, "Evaluating customer relationships: current and future challenges" by Siddharth Singh and Dipak Jain provides a thorough discussion of the extant literature on customer purchase behavior over lifetime with the firm and presents findings of new research by the authors. They discuss the commonly accepted framework for measuring customer lifetime value (CLV), and present a new framework that is better suited in the current complex and technologically advanced environment. Specifically, the chapter focuses on purchases and returns, and purchase commitments, over the entire customer lifecycle to investigate three questions, namely (i) how do the quantities of purchase and return change as customer lifecycle progresses? (ii) What is the relationship of purchases and returns with customer defection? And (iii) what is the relationship between purchase commitments and customer behavior of purchase, return, and defection? The discussion of these research issues is based on authors' new research in which they jointly model the quantities of purchase and return, risk of customer defection, and purchase frequency to investigate how these evolve over the customer lifecycle with the firm. Besides understanding of customer behavior over time, the authors argue, a firm needs to understand the key metric of customer lifetime value that forms the basis of many decisions in customer relationship management (CRM). The authors also provide discussion on segmentation of customers based on their lifetime value, accounting for both observed and unobserved customer heterogeneity. This part is based on the authors' research in which they jointly model customer spending, inter-purchase times, and customer lifetimes using a latent class framework. They also discuss the relationship between returns and CLV to highlight the importance of returns in estimating CLV, something that has been mostly ignored in practice.

Cova and Saucet explore and analyze how the marketing discipline has been trying to break from its traditional conventions in recent decades in Chapter 11. They attempt to integrate the many unconventional approaches related to new paradigmatic routes into a coherent perspective whole, especially by clarifying many nebulous epithets. The analytical discussion dissects the exchange process, as well as the assumed roles of the media and the point of sale. They advance the idea of street marketing as capturing meaningful consumer experiences. They also focus on the trend that eliminates the separation between the producer and the consumer. This approach will result in an increased consumer-made action.

Lindsay Korenich, Dana Lascu, Lalita Manrai and Ajay Manrai write a fascinating review and futurcast of social media in Chapter 12 titled, "Social media: past, present and future." This chapter reviews past social media developments, examines current social media practices, and offers future projections regarding the role of social media in marketing theory and practice. In the process, the authors provide a comprehensive understanding of social media in all its facets. They also offer conceptual frameworks of past and present social media developments and

practices, which include virtual game worlds, content communities, user generated content, social networking communities, virtual worlds (and virtual goods, ratings and reviews and other word-of-mouth communities), collaborative projects and mobile social media, among others. The authors project that the future social media technology will increasingly result from virtually endless interactions of company/company generated content and user/user generated content. Since the competition and information clutter is also projected to increase substantially in the future, the authors therefore argue that the companies will have to tap into the lucrative social media platforms in order to effectively market to target consumers. The chapter also addresses overall opportunities and challenges of social media including the inevitable life cycle scenarios where online social media as we know it will lose its potency and experience the fatigue and ineffective resonance we now observe in the case of telemarketing and other older media vehicles. In these scenarios, the chapter suggests that the social media may lose its power and even its significance – already, consumers are defecting from social media communities where they perceive an overwhelming brand and/or company presence, or even at the mere possibility that domain owners might attempt to monetize their website. These scenarios make it very evident, conclude the authors, that true innovation rather than mere tweaking of technologies is necessary for success and survival of social media in the future.

Chapter 13, "Brand engagement," by Martí, Bigné and Hyder focuses on the new ways of understanding brand–consumer relationships. The "consumers-listen" model is no longer a way to achieve successful interactions in the market. Brand engagement emerges as a promising construct to develop and maintain these relationships. In this chapter, the authors first analyze the main changes in marketing during the new millennium and its main effects on consumer behavior, pointing out the need for a brand–consumer reconnection. Then they conceptualize brand engagement as a multidimensional construct and develop a conceptual framework for brand engagement research. A brand engagement research agenda is also proposed. Finally, managerial implications for the refinement of the brand engagement concept are discussed as well as the need for the development of a brand engagement scale.

In Chapter 14, Yenicioglu and Christodoulides bring in an interesting contribution on branding in the age of digital connectivity. They start by emphasizing the non-utilitarian value of brands as well as allowing consumers to create their own different identities and foster social relationships. Interactive communications technologies have been compressing time and space around the globe and redefining the make-up of our society. Brands have an important role to play as a sign system to create meaning in consumers' everyday social lives. There is a symbolic aura about brands. The age of digital connectivity has shifted the power of branding itself. Brands are more ubiquitous and pervasive, but consumers are also turning their backs on many multiple intrusions. Companies cannot keep up also with the speed of communication transmission from people to people. Consumers want to be part of the brand story and be content curators. This chapter connects and intertwines the internet revolution with the new paradigms related to consumer behaviour and branding.

Kannan wrote a provoking Chapter 15 on "The future of pricing in the digital era." He outlines how recent advances in information and digital technology are creating significant opportunities and tools for the firm to implement innovative pricing strategies. Based on this analysis, he derives research directions on pricing in the digital era with a specific focus on (i) how firms ought to orient themselves to better prepare for these changes, and (ii) what the implications are for consumer behavior in this new environment. The value-based pricing framework is adopted as a useful framework to understand the different dimensions of value that different customers perceive, with respect to the different competitive offerings in the marketplace. He points to evidence on the technological developments and their trends in broad

categories such as search technology, mobile technology, revenue management and dynamic pricing technology, customization technology, and technology developments in the digital products and services domain.Then follows discussion of the implications of these developments for pricing, ending with interesting avenues for research.

Chapter 16,"Human–computer interaction" by Hyder, Bigné and Marti provides a thorough discussion of the extant literature on the interaction between users and digital devices. As digital technologies are constantly altering the ways consumers interact with companies, marketers need to be aware of how human–computer interaction affects marketing research and practice. Marketing researchers consider that marketing and information systems researchers should work together to provide better understanding of online consumer behavior. Authors analyze how human–computer interaction is affecting and modifying marketing research and practice and will continue to do so in the future as digital technologies evolve. New concepts for study are emerging in the discipline of online consumer behavior such as flow, stickiness, cognitive locking, information overload, sentiment and engagement. Clickstream data and Elementary Information Processes, such as mouse lab, can be used to assess how consumers behave within a web page, within a web site and across web sites. The chapter ends with new technologies that are impacting marketing such as smartphones, apps, the cloud, online collaboration and crowdsourcing, web-based TV platforms integrated with mobile phone, and advergames, among others.

Wang and Moutinho delve into the issue of academic research usually based on self-reporting measures and the inherent aspect of cognitive bias in Chapter 17. They introduce a novel approach to measure consumer emotions through the use of biological measures, through human–computer interaction, and in this specific case, by applying voice pitch analysis – utterance analysis.The software is called Slogan Validator and is designed to capture human emotions related to advertising slogans.The initial research studies have dealt with five major human emotions, but these researchers are now applying and studying reactions related to 12 human emotions. At this stage of the research project, it can be said that the Slogan Validator is proving more effective at recording and dissecting emotions related to low-involvement products.

Noel Murray, Ajay Manrai and Lalita Manrai in Chapter 18, "Memes, memetics and marketing: a state-of-the-art review and a lifecycle model of meme management in advertising" address the key issue of why, despite the great attention in the popular culture, memes and the science of memetics has failed to gain widespread acceptance among social scientists. The promise of memetics is that it will offer us an understanding of why some theories, ideas, fashions, products, brands, advertising slogans, or personalities take off and become popular, while others merely languish. The social scientists have largely not been receptive to memetics' origins in evolutionary theory, the authors argue, and thus have so far resisted adapting memes and memetics as a new paradigm in marketing. Specifically, in this paper the authors (i) assess the role of memes in marketing and advertising; (ii) review the development of memetics theory, originally speculated upon by Richard Dawkins in his influential book, *The Selfish Gene* (1976/2006) and later popularized by Susan Blackmore in *The Meme Machine* (1999); (iii) evaluate memetics' contribution to its most important explanatory targets – culture, marketing and advertising; (iv) examine the question of why memetics has had a more positive reception from biological scientists than from social scientists; (v) develop propositional network for memetics in advertising by offering a lifecycle model of memes in advertising; and finally, (vi) assess the prospects for memetics and memes in marketing and advertising and offer suggestions for future research.

Chapter 19, "Confirmatory Tetrad Analysis as a tool to decide between the formative/reflective nature of constructs in marketing and management research" by Joaquín Aldás-Manzano throws light on the debate about formative-reflective indicators through Confirmatory Tetrad Analysis (CTA). The first part of the chapter provides an intuitive introduction to the rationale of CTA. Secondly, the main steps in applying CTA are detailed, i.e. how to identify vanishing tetrads and how to eliminate redundant vanishing tetrads. Thirdly, the test statistic for vanishing tetrads is presented and fourthly, the issue of nested models, as a key step in the formative-reflective decision is addressed. The chapter ends with three specific applications of CTA to decide between the formative or reflective nature of different constructs.

William Rand wrote Chapter 20, "The future applications of agent-based modeling in marketing," (ABM), which shows the rich potential applications of this approach to marketing. An agent is an autonomous computational entity with its own methods and properties. It can be an individual consumer, or an agent can be a company. ABM constitutes a powerful tool for analyzing complex systems of behavior since it enables the linkage between low-level individual behavior and high-level emergent patterns that can be modeled using descriptions of agents, environments, and agent–agent or agent–environment interactions. One of the biggest differences between ABM and empirical modeling and ABM and game theory or many of the other approaches that employ math and statistics is that ABM is fundamentally not a mathematical approach. The chapter highlights a few of the areas of research within marketing that are ripe for the application of ABM.

Godinho and Silva tackle the topic of using Evolutionary Algorithms (EA) in Marketing in Chapter 21. This application relates to the utilization of intelligent solutions for solving complex problems. In their chapter, they pursue an analytical discussion of genetic, memetic and electromagnetic algorithms and potential application fields in marketing. This is an extremely under-researched area in the field of marketing. These algorithms are population-based meta-heuristics that generate an initial set of solutions and iteratively try to reach improved solutions by making previous solutions interact in specific ways and with specific search methods. The quality of the solutions is measured by a fitness function value that can be seen as an objective function to be minimized or maximized. These meta-heuristics only use an encoding of the solution and its associated fitness value, and they can be applied to a very diversified range of optimization problems.

In Chapter 22, Moutinho, Teixeira and Lage devote their efforts to the creation of the necessary awareness of the area of futures research, in particular applied to the marketing field. They build up their analytical discussion based on the six years of testing, validation and applicability of these methodologies in the context of the Marketing Futurecast Lab that has been running at the University of Lisbon in Portugal, supported by 23 very large international companies which include names like Volkswagen, Nestlé and Unilever, among many others. The analytical overview of these methods is encapsulated and classified in five major typologies – human imprinted research, expert-based methods, experimental approaches, complex (eco) systems and multilevel sensing. Within this classification, many methods are introduced and discussed such as biographic histories, futures wheel, mock environments, scenario planning with expert systems, visioning-preferred futures, causal layered analysis(CLA), backcasting, brain monitoring with reference class forecasting, among many others. Many illustrations and examples of applications are also presented.

As can be seen this book is intending to advance the scholarly knowledge of the discipline by dissecting a very diverse range of topics that will have an impact on the fabric of organizational marketing. A key visionary ethos behind the preparation of this Companion was to emphasize

the importance of the main remit of research scholars – to advance unforeseen knowledge, test it and validate it, with a view of creating a better world, in this case, through marketing.

We are very proud that we were able to assemble such an impressive group of our peers to collaborate with us and make such valuable contributions. We would also like to extend our sincere thanks to Jacqueline Curthoys for her trust in inviting us to edit this seminal text, and her understanding and patience throughout the process of the manuscript preparation. We are very indebted. Thank you.

We do hope that you enjoy the challenge, the mind-stretching discussion and the thought-provoking topics chosen.

Thank you so much for taking the time to open your mind to the content of this book.

Luiz Moutinho, Enrique Bigné, Ajay Manrai.

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Part I

New paradigms and philosophical insights

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1

Toward a new marketing paradigm

Yoram (Jerry) Wind

Abstract

The increasing importance of the segments of empowered and skeptical consumers coupled with the enormous advances in science and technology and the challenging and changing socioeconomic realities around the world have resulted in increased complexity and uncertainty in doing business. In the same way that innovations such as the iPhone challenged and changed the mental models of the mobile phone industry, the mental models of marketing must be challenged and transformed in order to keep pace with the rapidly changing business world.

This chapter examines 10 traditional mental models of marketing, explains how they are becoming obsolete, and offers new approaches. It further delineates 12 fundamental tenets of advertising that similarly need to be transformed to represent a more holistic, network-based, co-creative and experimental way of thinking. Finally, it looks at the mental models of marketing research, moving beyond the traditional methods of surveys and panels to obtain a portfolio of innovative approaches, including listening to consumer conversations on social networks, gaming and other platforms. Through its exploration of the mental models of marketing, advertising and marketing research, this chapter provides an introduction to the challenges facing marketing in the changing business environment, and initial insights into how to overcome them.

Key words

Mental models, marketing strategy, advertising, marketing research, empowered consumers, open innovation, segmentation, co-creation, adaptive experimentation, ROI of marketing, Customer Managed Relationship (CMR), network orchestration, social impact, silos, touchpoints, on-demand, Big Data, empirical generalizations.

Introduction

It is well established that our mental models or mindsets determine the way we see the world, make decisions and act (Wind and Crook 2004).

Therefore, if we are to get the most out of this volume on "the future of marketing," we must (1) understand our mental models of marketing, (2) check to see to what extent they are still

consistent with the changing business environment, and (3) if they are not, explore the development of new mental models.

Before starting our discussion it will be helpful if you, the reader, could identify your mental models of marketing.

My mental models of marketing are …

If you have difficulty doing it, and if you are a practitioner, try listing the key (and often implicit) assumptions of your marketing strategy. If you are an academic, try listing the key assumptions of the marketing strategies of firms you follow or of your own research.

My key assumptions are …

Having done this please answer the following questions regarding 10 possible key determinants of successful marketing strategy. Please do so by rating each on a 10 point scale where 10 is "completely agree" and 1 "completely disagree."

Key to successful marketing strategy are:

1. Controlling my branding strategy..... _____
2. Focusing on targeting the segment of my heavy users..... _____
3. Having an effective CRM system..... _____
4. Focusing on each of the 4Ps..... _____
5. Understanding the 3Cs..... _____
6. Understanding the consumer purchase funnel..... _____
7. Centering the strategy on a benefits-based positioning supported by product features..... _____
8. Basing the strategy on insights from consumer surveys and FGIs..... _____
9. Basing the resource allocation on the results of marketing mix modeling..... _____
10. Focusing the efforts on the selected optimal strategy as reflected in the advertising campaign..... _____

If your score is 50 or higher, then you are still subscribing to the traditional mental model of marketing that ignores the transformative power of the empowered and skeptical consumers and the advances in technology that facilitate it.

The premise of this chapter is that the increasing size and importance of the empowered consumer segment, the technological advances powering it and the other changes in the business environment (as illustrated for example in the 2012 "Did you know" video: http://www.youtube.com/watch?v=YmwwrGV_aiE/) all require challenging the mental models of marketing.

We all accept the fact that the iPhone challenged and changed the mental models of the mobile phone industry, iTunes challenged and changed the mental models of the music industry, Facebook and Google challenged and changed the mental models of digital advertising, and breakthrough innovations have challenged and changed the mental models of the industries they targeted. Consider for example the illustrative brands listed in Table 1.1, all of which challenged and successfully changed the mental models of their industries.

Table 1.1 Breakthrough innovations that challenged and successfully changed the mental models of their industries

Innovators in …			
Digital	*Transportation*	*Retail*	*Products/Brands/Services*
Twitter	Google Car	Apple Store	Viagra
YouTube	Tata Motors	Costco	Sayaka Endoscope Capsule
Google	NetJets	Walmart	Cirque Du Soleil
Samsung	Toyota Prius	Starbucks	Post-It
iPhone	Southwest Airlines	Home Depot	XNA Creators Club
iPad		Groupon	FedEx
Facebook	*Games*	Ebay	Hopper
Napster	Microsoft Xbox	Priceline.com	Google Glasses
MIT's Media Lab Laptop	Wii	Build-a-Bear	Quicken
TiVo	Zynga		Prosper Loans
			Nike
			CNN
			ATM

The objectives of the chapter are to (a) briefly discuss the reasons for the need to challenge the current mental models of marketing, (b) propose new paradigms for marketing strategy, advertising and marketing research, and (c) outline ways to implement new mental models of marketing.

The challenges to the current mental models of marketing

The increasing importance of the segments of empowered and skeptical consumers coupled with the enormous advances in science and technology, as well as the challenging and changing socioeconomic realities around the world, has resulted in increased complexity and uncertainty in doing business. The magnitude and speed of the changes in the business environment have led to a situation whereby most business leaders believe that their organizations are not ready to cope effectively with these changes (IBM 2010). Similarly, most CMOs believe that their organizations are not prepared to deal with the new forces affecting marketing including data explosion, social media, growth of channel and device choices and shifting consumers characteristics (IBM 2011).

The IBM Global CEO study further explored the key characteristics of those firms who were successful both before and after the 2008 crisis. Their analysis identified 3 key characteristics – embody creative leadership, reinvent customer relationship and build operating dexterity. Effectively following these prescriptions and addressing the changing business environment requires challenging the mental models of the business, and in particular, of marketing.

To illustrate the need to challenge the mental models of marketing, let's consider the reasons why the mental models underlying the 10 questions you responded to in the introduction are no longer valid in the age of the increasingly empowered consumers.

1. *Controlling my branding strategy.* While branding and branding strategy are important and often viewed as major CMO roles, it is important to note that it is consumers' perceptions of, preference for, conversations about, and behavior toward the brand that determine its value – and increasingly, companies have less control over their brands.

2. *Focusing on targeting the segment of heavy users.* While engaging and nurturing the heavy user segment is important, the findings of Byron Sharp clearly show that one cannot ignore the light users (Sharp 2010). Similarly, the findings of Peter Field show that campaigns focused on penetration are much more profitable than those focused on loyalty (Field 2011).
3. *Having an effective CRM.* While an effective CRM system is becoming a must-have component of any organization's customer relationship management efforts, it does not address the challenge of the increasingly empowered consumers. To effectively engage the empowered consumers, firms should consider the development of a Customer Managed Relationship (CMR) platform in which the customers can manage their relationship with the firm and its competitors. American Airlines' Sabre system that facilitated the travel agents' interactions with all airlines and not only AA is a good example of such a development. The advances in apps allow today the development of CMR systems for customers of almost any product and service area from cosmetics to financial services.
4. *Focusing on each of the 4Ps.* While Product, Price, Promotion and Place are still important components of the marketing mix, they: ignore other key components (such as segmentation, positioning, and customer relationship); ignore the importance of the integrated offering across all the firm's touchpoints with their potential consumers (the interaction among the 4, and more, Ps); and most critically, they are based on the assumption that the firm is in control, ignoring the need to develop platforms to engage the empowered and skeptical consumers.
5. *Understanding the 3Cs.* While building one's strategy based on the understanding of the Customers, Company and its Competitors is still important, the 3C model tends to ignore other key stakeholders – such as the government, suppliers, retailers, partners and strategic alliances, and analysts who can have major impact on a firm's business and marketing strategy.

   The 3C model also tends to ignore the importance of engaged employees as both a source of innovation and as the firm's ambassadors. And while the model should be applied globally, it is often limited to the markets the firm currently serves, ignoring other emerging markets of the future. Most critically, it ignores the needed shift from the firm to the network in which the firm is embedded.
6. *Understanding the consumer purchase funnel.* While understanding of consumer behavior is as important as ever, the purchase funnel concept is obsolete. The funnel fails to recognize the empowered and skeptical consumers, the proliferation of touchpoints, and the changing consumer behavior that includes the likes of the Zero Moment of Truth (Lecinski 2011) and the evolving nonlinear, dynamic and more complicated behavior captured by the concept of the "Consumer Decision Journey" advocated by the McKinsey Quarterly article by that name (Court et al. 2009).
7. *Centering the strategy on benefit-based positioning supported by product features.* While benefits supported by product features are still relevant for positioning, we cannot ignore the implications of the consumer ability to compare the product features and prices of all products and services. This ability to compare product features on all screens, including smartphones, is dramatically changing the nature of retailing (as evidenced by the fear of many retailers of becoming the showroom of Amazon.com) and positioning. Positioning in the age of the empowered consumers who are powered by the enormous advances in technology has to be much more emotional, and must allow the consumer to identify with and relate to the brand, customizing it as desired.
8. *Basing the strategy on insights from consumer surveys and Focused Group Interviews (FGI).* Historically, consumer surveys and FGIs were among the major marketing research tools of

many companies. Yet the increasing non-response rates to surveys, the limitations of internet panels employing closed-end questions, the increased realization of the non-projectable and biased nature of findings from FGIs, and the emergence of new ways of gaining reliable and valid consumer insights are changing the face of marketing research. Key among these important developments are Big Data and analytics (including data mining), text mining – the digital ethnography of the social networks, and the design of games including multiplayer games in such a way that the players' moves provide needed insights into their perceptions, preference and actions.

9. *Basing the resource allocation* on *the results of marketing mix modeling (MMM)*. Despite the enormous sophistication of marketing mix modeling and the increased reliance on it, one has to realize its limitations. The results are based on historical data; they do not capture all the consumer touchpoints and their interactions; they are limited to conventional metrics (and even these vary greatly by country, restricting significantly the global value of the MMM); they do not capture the full range of the empowered consumers' interactions with the brands and with others, and most importantly, unlike experiments, they do not identify the causal relationship offering only causal inference. Thus, while they can offer a starting point for the resource allocation decisions they should be augmented with adaptive experimentation.
10. *Focusing the efforts on the selected optimal strategy as reflected in the advertising campaign*. While focus is important given the increased uncertainty, complexity, and magnitude and speed of the changing business environment, as well as the unpredictability of much of the behavior of the empowered and skeptical consumers, the idea of a single "optimal" strategy is a myth. The alternative is the adoption of an adaptive experimentation approach which encourages the design and implementation of innovative initiatives, measurement of the outcomes, learning and improved decisions over time, and the creation of an innovative corporate culture in which failure is OK and lessons from it rewarded.

These 10 examples, individually and collectively, illustrate the need to challenge the mental models of marketing in search of a new paradigm that is capable of effectively addressing the increased importance of the empowered consumers and the socioeconomic and technological contexts in which they operate. The dramatic changes in the business environment have led to increased pressure by most businesses and their boards for greater marketing accountability and documentation of the ROI of marketing and advertising expenditures. This pressure has also led some of the more innovative businesses to adopt new business and revenue models, many of which require challenging the traditional mental models of marketing.

Consider for examples the following new business models and their implications to marketing:

- *The co-creation model*. In this model, consumers are engaged in the design, and even manufacturing and marketing, of the firm's products and services. This model is consistent with the early work of Eric von Hippel (Hippel 1988) and others who documented the value of engaging customers as "Partners." This model is especially relevant for the segment of empowered consumers and has major implications for the firm's offerings and development of platforms for engaging the consumers.
- *The open innovation model*. Given the findings of Innocentive (www.innocentive.com) that the further the discipline of the problem solver from that of the problem, the higher the likelihood of success – open innovation is no longer an option but should be considered by every firm. In addition to the increased popularity of Innocentive with over 250,000 problem solvers around the world, numerous other firms are entering the space. The iPhone and iPad network

of app developers is one of the most compelling examples for the power of open innovation. With all its resources even Apple could not have developed the hundreds of thousands apps nor engage so many developers and devoted followers as their app system has done.

- *New revenue models.* These include the increased use of FREE (Anderson 2009), flipping the process and allowing the consumers to determine the price as in the case of priceline.com, and other innovative revenue models such as the ones implemented by Apple in the pricing of iTunes and the revenue model regarding apps. In these and similar cases, the traditional approaches to pricing should be rethought and augmented with new mental models of pricing and marketing.
- *The holistic model.* This model is based on the increased realization that consumers want a holistic solution (consider the Mayo clinic vs. the traditional "body part" specialization of the Johns Hopkins model of Western medicine), and respond better to a message that is consistently delivered through all their touchpoints with the brand. Unfortunately the delivery of a holistic message and solution requires coordination and ideally integration across numerous corporate silos and outside providers. Consider for example the challenge of delivering an integrated message when the touchpoints include advertising through the traditional media, digital media, PR, sales force, call center, package and product design, store design, the employees as ambassadors, and word of mouth through the social networks and other more conventional channels. Coordinating, let alone integrating, the message of these diverse touchpoints requires rethinking the traditional business organization and the creation of a new role of *network orchestrator*. The role of marketing in this case is dramatically different from its role today and requires the adoption of new mental models.

If at this point you have any doubt that the current mental models of marketing have to be challenged and most likely changed, consider three sets of cases:

1. The cases of Kodak, Polaroid, the record companies, and the numerous other companies that went through bankruptcy; or companies such as Nokia that lost their dominant market position. In all of these cases, the common factor was reluctance to challenge and change their legacy mental modes.
2. The cases of IBM, Xerox, Apple and AT&T and others who were on the brink of disaster but their management had the vision, innovation and courage to challenge and change their mental models and revive the company and lead it to its current success.
3. The cases of the companies, such as the ones illustrated in Table 1.1, who have been successful in introducing breakthrough innovations by challenging and changing the metal models of the industries they targeted.

Note that all three categories include B2C as well as B2B firms, large as well as small firms, product as well as service firms, local as well as multinational firms, and US firms as well as firms from other countries.

Let's turn now to the major sections of this chapter in which we outline some of the new mental models of marketing strategy, marketing research, and advertising.

Toward a new mental model of marketing strategy

The central principle of marketing strategy and the core of the marketing orientation as a business philosophy – the centrality of the consumers and their evolving needs – are still as valid as ever. Furthermore, the fact that all markets are heterogeneous and that the focus of strategy

should be on selected market segments is as true today as it was when companies first started segmenting their markets. The consumers, however, are no longer passive "targets" but rather on many occasions are increasingly empowered, skeptical and equipped with technological advances that have enhanced dramatically their ability to get information, education and entertainment anytime and anyplace on multiple screens and from anyone including friends, other consumers, experts, and other firms.

The implicit focus of much of the discussion of the changing consumer dynamics, and the resulting mental models of marketing, is driven by consumers in developed countries and even more so by the US-driven assumption of focus on urban centers with an average home size of about 2,400 square feet (Mahajan 2012). The reality, however, is (a) that most of the world population is still in the 86% as articulated by Mahajan and Banga in their book *The 86 Percent Solution: How to Succeed in the Biggest Market Opportunity of the Next 50 Years*; (b) that the level of urbanization (about 50% globally) varies greatly by country and in many, including India and most of Africa, over two thirds of the population is still rural; and (c) that the average home size in most of the world is under 1,000 SF. These simple facts have enormous impact on which products and services are bought, and how they are being communicated, distributed, and sold. It is no wonder, therefore, that some of the more innovative products and services are from emerging markets (see for example *The Fortune at the Bottom of the Pyramid*: Prahalad 2006) and that much of the recent focus in the innovation literature is on reverse innovation (Govindarajan and Trimble 2012), frugal innovation, and Jugaad innovation (Radjou et al. 2012). The six principles of Jugaad innovation are: seek opportunity in adversity, do more with less, think and act flexibly, keep it simple, include the margin, and follow your heart. These principles are rarely included in the traditional mental models of marketing and do require challenging many of the current models.

The empowered consumers with their real time access to information and increasing range of options to meet their needs and wants are taking the control from management. While not all consumers exercise their empowerment, and even those who do don't do it in all occasions, the increasing consumer empowerment and its implications requires a major shift in the mental models of marketing.

The emerging new mental models of marketing strategy involve a blend of some old but universal principles, such as the centrality of the consumer and the need for a portfolio perspective that facilitates the design and implementation of strategies for diverse segments, some "modified" rules that require some changes to the traditional concepts, and some newer "rules" derived from new mental models for the age of the empowered consumers.

The "modified" rules include for example the rethinking of market segmentation. When increasing numbers of consumers are empowered and skeptical, the new segmentation requires a balance between increased reliance on the "self-selection" strategy in which consumers can self-select the offering that best meet their needs (Frank, Massy and Wind 1972) and the increased capabilities of companies with their Big Data and analytics to target consumers in real time with relevant, context specific and valuable messages, and opportunities to personalize, customize and purchase their choices (Bell and Wind 2013).

Before we turn to a discussion of a few key characteristics of new mental models of marketing strategy in the age of the empowered consumer, what are your views of the needed "new" mental models of marketing strategy?

> My mental models of the new marketing strategy models in the age of the empowered consumer are …

How consistent are your views with the following new mental models that require marketers to:

(a) Develop platforms to engage consumers in all the areas that traditionally the firm used to do by itself
(b) Shift the focus from the traditional boundaries of marketing to greater coordination and integration with the other management disciplines; and within the marketing discipline, bridge the traditional silos to facilitate the delivery of a holistic offering involving all touchpoints
(c) Augment your current offering with "on-demand" marketing and advertising
(d) Expand the marketing capabilities to accommodate open innovation for all the marketing domains
(e) Change the approach to strategy from the design and execution of a single "best" strategy to the adoption of the adaptive experimentation philosophy and approach
(f) Expand the objectives of marketing (and business) strategy from profitability (maximize long-term shareholder value) to include positive social impact.

A) The age of platforms

Successful marketing in the age of the empowered consumers requires the engagement of the consumers by creating platforms that engages them in at least 4 areas:

- *Platforms for engaging consumers as co-designers and co-producers of customized products and services*. Consider for example the success of Build a Bear (http://www.buildabear.com), Nike (http://www.nike.com) and Dell (http://www.dell.com) all of which engaged their customers in the design of their customized products. The trend toward customerization (Wind and Rangaswamy 2001) has been increasing over the years, encompassing most product and service categories. Consider for example the watch configurator of Bocce which allows you to design your ideal watch from over 150,000 potential variations (www.boccia.com).
- *Platforms to allow the consumers to manage their relationship with you and other companies.* These Customer Managed Relationship (CMR) platforms in contrast to the traditional Customer Relationship Management systems (CRM), allow the consumer to manage their relationship with all the relevant brands and providers. A number of firms are currently experimenting with such platforms including one in the beauty area and one in the financial service area.
- *Platforms for engaging consumers as (credible) salespeople and marketing advocates.* Consider for example the success of diapers.com, which created a platform and incentive system to encourage its customers to recruit new customers. Companies such as Groupon (www.groupon.com) and Foursquare (https://foursquare.com) provide their customers with a platform to recruit and engage others. The social networks such as Facebook provide a platform in which brands can leverage the friends of its followers. The value of platforms to engage customers as advocates is also illustrated in Glen Urban's book *Don't Just Relate – Advocate* (Urban 2005).
- *Platforms to allow consumers to determine the price and value of your offering*. Priceline.com is an early example for such a platform. But there are other companies, even restaurants, who have been experimenting with letting their customers determine the price they are willing to pay for the meal or in some cases for a bottle of wine. A surprising finding of some of

these experiments is that some consumers actually paid higher prices than what the restaurant would have charged.

These and similar platforms offer participating consumers opportunities to interact with others who use the platform, and thus enhance the value of the platform to its users. Platform based marketing strategy requires rethinking the offering, the strategy to encourage the consumers to engage with the platform, and the organizational architecture to develop, deliver and enhance the platforms.

B) Bridging the silos

The benefits of specialization have led most organizations to have separate disciplinary/functional units devoted to R&D, Manufacturing, Marketing, Sales, Service, IT, Compliance, Legal, Finance, and other business functions. Unfortunately, to address the changing role of the empowered consumers and the desire of many of them for an integrated offering, speedy response and delivery, and value, it is key to coordinate and ideally integrate the capabilities of these functional silos. This changes quite dramatically the role of marketing from an isolated business function to a linking pin between the external world of the consumers and the internal siloed functions.

The impact of the changing business environment on the need for speed and innovation in all business functions has led many organizations to link their R&D and operations and adopt agile methods. These have huge implications to the role marketing could and should play with R&D and operations. Similarly the increased importance of Big Data, cloud computing, social networking and mobile has, in many firms, led to much closer relationships between marketing and IT.

The need to break the traditional isolation of the business functions is equally important when one considers the various marketing and marketing related functions. Consumers are looking for a consistent, relevant, and timely story (message/positioning/information/educational material…) delivered creatively in a fun, easy, informative, and entertaining way through all touchpoints anytime, anyplace. These touchpoints include not only the traditional media, PR and new digital media, but also the sales force, call center, product and package design, store design, and other touchpoints a consumer may have with the brand.

This requires bridging the internal and external silos, since every one of these functions has a growing industry of special services behind it. To effectively bridge the silos we need to challenge and change our mental models. This is not an easy shift. Just consider how difficult it has been for traditional Western medicine (the Johns Hopkins model) to move closer to the Mayo clinic holistic patient centric approach.

A change in the mental model is a required first step. Once this is done, one has to consider establishing the role of a network orchestrator (Fung, Fung and Wind 2007) and changing the entire organizational architecture (culture and values, processes, structure, resources, people, and reward and incentives) to facilitate the orchestration of the various silos.

A key challenge is the determination of which model the network orchestrator should follow – that of a traditional conductor of a symphonic orchestra or that of the modern conductor such as Ben Zandler (Zander and Zander 2001) who views as his prime responsibility the empowerment of the musicians, or a string quartet or a jazz ensemble. Once this is decided, the critical question is who should play the role of the network orchestrator? Is this the role of the CMO? CEO? A new function within the organization? A new agency devoted to it? One of the traditional advertising agencies?

The siloed nature of the academic marketing community is not helping the need to bridge the various silos. Each of the marketing functions – advertising, digital marketing and e commerce, retailing, new product development, pricing, distribution, marketing research, branding and sales force – is often taught by specializing faculty. Yet the biggest obstacle academic marketing poses to the solution of the siloed nature of marketing is the 3 disciplinary silos of the behavioral, quantitative and strategy (see for example the guest JM editorial of Reibstein, Day and Wind 2009). Bridging the silos requires close collaboration among these three perspectives and competencies in the solution of real world problems.

C) On-demand marketing

One of the major findings of the early studies of empowered consumers (see for example Wind and Mahajan 2001) has been their interest in customized and personalized products and services. In addition, growing segments of empowered and skeptical consumers are irritated with spam and irrelevant offers by owned and paid media. The demand for "on demand" marketing and advertising, which is "always relevant and timely," is increasing. The advances in enabling technology make this a reality (see for example Bughin and Wind 2013) and force major changes to the mental models of marketing strategy and the way marketing and advertising is created and delivered. In fact it suggests a shift from a campaign model of delivery to a newsroom model (Wind and Shetty 2013).

D) Open innovation

As mentioned earlier, open innovation is not an option but "a must" since no organization can recruit all the diverse disciplines that contribute to the solution of their challenges. In advertising, Victor & Spoils (https://www.victorsandspoils.com) is a great example of a new type of agency which has a growing network of over 7,000 creatives. Similarly, She Says Shout (www.weareshesays.com/tag/shout) is a NY based agency that created a network of thousands of professionals capable of addressing all aspects of marketing and advertising assignments.

While there are various models of open innovation (Nambisan and Swahny 2007), marketing strategy can benefit from open innovation in the generation and dissemination of creative strategies. Consider for example the case of Victor & Spoils and other efforts to utilize the "wisdom of the crowd" in developing and distributing user generated content in the form of (a) new products and services via apps, (b) the development of compelling and shareable videos and their dissemination via YouTube and other social networks and (c) advertising as demonstrated by the winning Doritos commercial in a number of Super Bowls.

The conclusion for any firm, regardless of size, is that the traditional mental models of marketing and business should be changed to accommodate the benefits of open innovation. Yet, the adoption of mental models that capitalize on open innovation requires serious challenge to the conventional mental models and managerial courage.

E) Adaptive experimentation

Given the magnitude and speed of change, the enormous advances in science and technology leading to media proliferation and inventions that are radically changing our lives, the intensified competition, the uncertainty as to the socioeconomic political and regulatory environment, and other changes affecting the business environment of all firms, it is too risky for any company to follow a single "silver bullet" strategy. Instead, the only way to develop confidence in our ability

to understand the causal link between our actions and the outcomes (and to learn by doing) is by adopting the adaptive experimentation approach.

The challenge of the reliance on a single strategy is evident when examining the left panel of Figure 1.1. This is the case in which the firm invested X million of $ in some key activity (such as advertising, sales force, current distribution system etc.). At the end of the period the outcome was level Y of sales (or market share or any other measure). The critical question facing management at that point is what they should do the following year. Should they increase their investment, keep it at the same level X, or decrease it? The reality is that there is no way of answering this question in a meaningful way. Relying on some resource allocation heuristic such as a percent of sales, or matching your key competitor, is an invalid guideline.

The only way to answer this critical question with confidence that we know the causal link between the investment and the outcome is by following the adaptive experimentation approach, of which the first phase is illustrated in the right hand panel of Figure 1.2. In this case, management decided to proceed with 3 strategies: ½X, X and 2X. Depending on the results – whether they are response function A or B – management can easily determine what to do next. If A, keep level X, and start experimenting with other marketing mix elements – and if B, continue to invest and experiment next time with 3X and even higher.

If management has great confidence (either as a result of marketing mix modeling or intuition) that the "best" strategy is level X , they should consider investing 80–90% of their resources in this strategy and allocate 10–20% of their resources to experimenting with other strategies.

Obviously the case presented in Figure 1.2 is extremely simplistic and experimentation can include any number of variables involving more complex experimental designs, such as Latin square design, Greco Latin square design or other fractional factorial designs. Regardless of the selected design, it is advisable to use ANCOVA so as to be able to use covariates to control for known difference between the experimental and control conditions.

The advantages of adaptive experimentation are many and most important among them are:

1. The ability to learn about the causal link between the strategies and the outcomes
2. The ability to improve decisions
3. Encouraging management to experiment with truly innovative options (there is no sense experimenting with +/−5% of X)
4. It forces measurement of the outcomes
5. It creates a culture of innovation by making it OK to fail and learn from failure

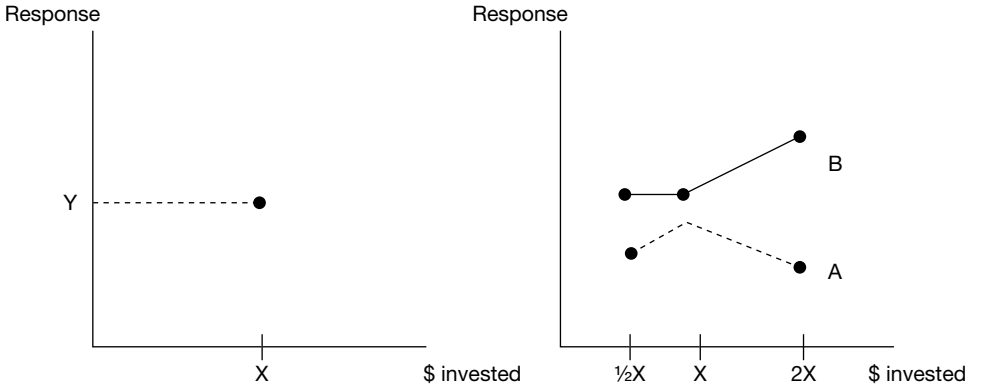

Figure 1.1 The case for adaptive experimentation

6. It facilitates fast action – fail fast, and if successful, scale big
7. It provides a competitive advantage. The more complex the experiment, the harder it is for the competition to figure out your strategies.

The success of adaptive experimentation as the standard operating approach in direct marketing, and as one of the backbone strategies of companies such as Google and Facebook, should lead others to adapt it. Yet it is surprising how few companies accept it as their operating philosophy. Adopting adaptive experimentation is "a must" in any new mental model of marketing strategy.

F) Expand the objectives

Enlightened management and boards start realizing that businesses have to take a more proactive role in addressing society's challenges. Consider for example *Who Cares Wins* by David Jones, CEO of Havas, or the positions of companies such as Unilever. Jim Stengel, the former CMO of P&G, begins his book *Grow* by stating "The data from a ten-year growth study of more than 50,000 brands around the world show that companies with ideals of improving people's lives at the center of all they do outperform the market by a huge margin." And he continues to quantify the impact: "An investment in the Stengel 50, the top 50 businesses in my ten-year-growth study, would have been 400 percent more profitable than an investment in the Standard & Poors (S&P) 500" (Stengel 2011).

Given that the increasing importance of the empowered and skeptical consumers and the other radical and fast changes in the business environment affect the marketing strategy of every firm and organization, challenging the current mental models of marketing strategy is "a must." In this section we outlined some of the required modification to current mental models such as those related to market segmentation as well as 5 new mental models. The appropriateness of each of these new mental models to the marketing strategy of every firm and organization should be examined, tested and if validated adopted.

These six new mental models of marketing strategy as summarized in Figure 1.2, individually and collectively challenge the current mental models of marketing strategy. While these are

a) Develop platforms to engage consumers in all the areas that traditionally the firm used to do by itself

b) Shift the focus from the traditional boundaries of marketing to greater coordination and integration with the other management disciplines and within the marketing discipline bridge the traditional silos to facilitate the delivery of a holistic offering involving all touchpoints

c) Augment your current offering with "on-demand" marketing and advertising

d) Expand the marketing capabilities to accommodate open innovation for all the marketing domains

e) Change the approach to strategy from the design and execution of a single "best" strategy to the adoption of the adaptive experimentation philosophy and approach

f) Expand the objectives of marketing (and business) strategy from profitability (maximize long term shareholder value) to include positive social impact.

Figure 1.2 Six new mental models of marketing strategy

relevant to the design of the overall marketing strategy as well as the strategy for specific marketing mix elements, each firm and organization should test the validity and relevance of new mental models to its idiosyncratic conditions.

Toward new mental models of advertising[1]

As one of the elements of marketing strategy the required shifts in the mental models of marketing strategy (as discussed in the previous section) apply to advertising as well. The purpose of this section is, however, to highlight a number of the unique aspects of the typical mental models of advertising that require challenging.

Reflecting on advertising as it is practiced today, what are your mental models of advertising that are likely to be relevant in our changing times, and what are those that may require change?

My mental models of advertising that are likely to remain relevant:
My mental models of advertising that may require change:

While there are a number of innovative advertisers and agencies who have been successfully challenging and changing the mental models of their industry, the list below is aimed as a checklist against which all advertisers can assess the degree to which they have been successful in moving toward the new mental model of advertising for the age of the empowered consumer. Our list of required challenges and in most cases changes include 12 mentalities which are summarized in Table 1.2 and briefly discussed below.

Table 1.2 Toward new mental models of advertising

Old advertising mentality		*New advertising mentality*
Advertiser in control	➔	Platforms for empowered audiences
Passive target consumers	➔	Individuals, their lives and their worlds; active consumers
"Soft" goals (awareness, attitude toward brand, loyalty)	➔	Strategic business objectives and "hard" measures (e.g. sales, price insensitivity, and social impact)
Intrusive and interruptive	➔	On-demand, opt-in and value creating
Convincing and persuasive	➔	Conversation and co-creation
Reaching	➔	Reaching, engaging and providing personal value
Copy and creative	➔	Story/narrative and creative execution
Mass and digital media	➔	All touchpoints and their interactions
Disciplinary silos	➔	New holistic advertising organizational structure
Campaigns	➔	Continuous platforms, always-on adaptive experimentation
Momentum and search for the new	➔	Search for empirical generalizations and search for the new
Marketing mix modeling, traditional data sources	➔	New data and analytics, including text mining and consumer in control of data

1. Advertising, as one of the key elements of marketing strategy, shares some of the same traditional mental models of marketing strategy that require challenging. Consider for example the old belief that the advertiser is in control vs. the changing reality that at least the segment of empowered consumers in many situations is taking over the control. Thus, as discussed in the previous section, advertisers should focus on the creation of platforms to engage the empowered and skeptical consumers.
2. A dominant belief of most advertising models has been the need to focus on target consumer segments. The changing consumer environment does require, however, that we pay increased attention to the broader context of the individuals, their lives and their worlds and not restrict the focus to the individual's role as shoppers, buyers, and consumers. Similarly, the traditional belief that most consumers are passive (and willing) recipients of advertising should be challenged and modified to recognize the fact that, while at times the empowered consumers are behaving as passive recipients of advertising, they are primarily more active consumers. The phenomenal growth of multi-screen entertainment, in which increasing number of consumers are on their laptops, tablets or smartphones while watching TV, is strong evidence for the fact that consumers should not be treated as passive recipients of advertising.
3. Advertising objectives ever since Colley's 1961 DAGMAR report included multiple measures. Unfortunately, many of the mental models of advertising still focus on "soft" objectives and measures such as awareness, and attitudes toward the brand. Increasing evidence suggests the importance of including "hard" objectives and measures of advertising, such as sales and even price insensitivity. Peter Field, for example, found in analyzing 880 IPA Effectiveness award winning cases that the 5% of the advertising campaigns that had this latter objective had the highest profit growth of any objective (Binet and Field 2007). And in considering the objectives and measures of advertising, one should not forget the shift toward doing good (see the discussion on the expanding strategy objectives and in particular the reference David Jones' book *Who Cares Wins*).
4. Most of the mental models of advertising are still based on advertising's being intrusive and interruptive. While few still state this as an explicit mental model of advertising, much of the practice of advertising is based on this implicit belief. Just examine the typical advertising schedule. With technological advances that increase the consumer's ability to skip and delete advertising messages, this is not a sustainable model of advertising. Efforts to legislate against or sue those using these devices are as futile as the efforts of the record companies to sue Napster and its users. Thus, advertisers have to ensure that their advertising message and its time, mode and context of delivery has relevance and value to its target audience. New mental models of advertising should be increasingly based on the assumption that only timely, relevant and valuable advertising will be chosen "on demand" and be "opted in" by consumers who increasingly have the freedom to choose what, when, in which context and on which device to watch, see, or hear.
5. Related to the current mental model of intrusive and interruptive advertising is the belief that advertising should focus on being convincing and persuasive. In the world of empowered consumers, and when all consumers have little trust in advertising and perceive businesses among the lowest professions in terms of their credibility, the likelihood of advertising to succeed in convincing and persuading the consumers is quite low. A refreshing outcome of this trend is the recent evidence that in many of the political races of 2012, the winner was not the one who spent the most on negative advertising. The alternative mental model of advertising should focus on advertising as being part of the conversations with and among consumers, and encourage co-creation with the consumers.
6. Related to the last two beliefs of the old mental models of advertising – intrusive and interruptive and convincing and persuasive – is the belief in the value of reach. While reach

is still an important dimension of advertising and should not be ignored, it should be augmented with a focus on engaging the audiences (of both light and heavy users) by providing them value. Value can refer to getting the right information and education at the right time, place and context, or it can refer to entertainment and fun, added convenience of shopping and buying, and even enriched meaning and enhancement of audience identity.

7. The traditional mental model of advertising focused on the "message"/"copy" and its creative execution. In contrast, the new mental models of advertising should focus on "the story"/narrative as the means to reflect the brand's positioning/value proposition and engagement of the audience. The focus on the story emphasizes the important role of the audience in the creation, interpretation and the entire story telling/listening experience. To create the story, one can also challenge traditional creatives and learn from how agencies such as CP&B form creative teams composed of both a copy writer and a digital technologist, or how agencies such as Victor & Spoils employs thousands of creatives in an open innovation network.
8. The traditional mental model of advertising focused on *the media* and especially the mass and digital media. Recently many have added "social media" to mass media, despite the fact that social networks cannot be treated as regular media. The challenge should, however, be the traditional focus on media since the consumer has many more touchpoints with the brand and its company. Consider for example product and package design, store design, the sales force, the call center, the e-commerce sites, the payment system, etc. This shift from media to all touchpoints is one of the major challenges to advertising as we know it today.
9. The shift of the mental model of advertising to all touchpoints is associated with a shift from disciplinary/functional silos to a holistic, coordinated and ideally integrated story delivered creatively through portfolios of touchpoints. Despite efforts by the Cannes Lion platinum award to encourage and reward such a shift to integrated advertising campaigns, most advertising is still being treated as a set of disciplinary/functional silos. Consider for example the proliferation of media agencies, digital agencies, creative agencies, PR agencies and others. This functional specialization is often replicated in the internal structure of the advertiser's organization. Since the ownership and control of many of the touchpoints is diffused, there is an increasing need for a new role of "network orchestrator" (see for example Wind et al. 2009, pp. 299–316; and Wind and Gardner 2013).
10. The traditional mental model of advertising tends to center on *campaigns*. In contrast, the shift toward new mental models of advertising centers on continuous, ongoing real time advertising through appropriate platforms and using adaptive experimentation to continually learn and improve the effectiveness of advertising. Obviously, campaigns can still be designed and offered to achieve specific objectives, but they should be viewed as part of a larger holistic, ongoing program. An instructive metaphor from the museum world lies in the role of blockbuster exhibitions. Many museums center their exhibition programs on a series of blockbuster shows. But some of the more successful museums, such as the Met, have created a balance between the blockbuster exhibitions and attractive ongoing programs based on creative presentation and interpretation of their permanent collections as well as special exhibitions highlighting (and packaging) elements of the permanent collection.

    Another metaphor that illustrates the needed change to the traditional mental model of advertising is that of advertising as a newsroom. Instead of focusing on a major campaign, think of advertising as requiring "just-in-time" response to changing conditions and opportunities. A great example of this was the response of Oreo during the blackout period of Super Bowl 2013 with the tweet "you can still dunk in the dark," which led to enormous buzz.

11. Advertising mental models and practice have always been characterized by the search for "the new" and continued momentum of what the advertiser believed is working or is the customary approach (e.g., "we should be in the Super Bowl"). While the search for the new is a healthy attitude that should be continued, the bias toward continuation with what was done should be replaced with a more valid search for empirical generalizations. Empirical generalizations, which are based on multiple studies reflecting diverse conditions and ideally done by various researchers, offer the most accurate and valid insights into what works and doesn't work. To date we have an increasing number of empirical generalizations in advertising (see the June 2009 and March 2013 issues of *JAR*), and management should consider these as starting hypotheses for their advertising strategies. Additionally, management should augment the published EGs with their own empirical generalizations based on the various studies and evidence they have accumulated re what works for them.
12. The more sophisticated advertisers and agencies today are relying on marketing mix modeling (MMM) using the traditional data sources. While results of these models, and especially those based on single source data, can offer useful initial insights into advertising resource allocation, they do have significant limitations that the new mental models of advertising should correct. Among the major shortcomings of the current approaches are: they use historical data, they do not include data on all touchpoints, they rarely offer insight into the interaction among the various touchpoints and the creative execution of the story, and most of them are not built to capitalize on Big Data and analytics including text mining of the social networks. These MMM ignore the emerging reality in which consumers control their own data.

Each of these 12 mentalities, and especially their interactions, challenge the traditional mental models of advertising and point the way to areas requiring challenge, adaptation to the idiosyncrasies of the firm, and potential change.

Toward new mental models of marketing research

Think about the way you use marketing research. What are your mental models of marketing research?

My mental models of marketing research are …

To what extent do your mental models of marketing research reflect the changes to the target audiences and the changing environment of most firms and organizations? The revolutionary advances in Big Data and analytics? And the demand for real time insights and accurate measures of performance during turbulent and uncertain times?

These forces of change have been challenging the mental models of marketing research and have huge implications to the marketing executives using marketing research and modeling, as well as to the marketing research and modeling industry and to the academics who use, study, develop and teach marketing research and modeling.

To allow you to assess the degree to which your mental models of marketing research and modeling effectively address the challenges facing this area, Figure 1.3 summarizes 10 questions that reflect new mental models of marketing research. The rest of this section briefly discusses these 10 questions.

1. How heavy is your reliance on surveys and what is the balance between open-ended and closed-end questions and between tradeoff questions and Likert scales?
2. Are you relying on internet panels as representative of your relevant universe?
3. Are your metrics keeping pace with changing digital world and the need to focus on all the touchpoints?
4. Are you using field experiments?
5. How effective and timely is your *listening* to your customers, prospects and other key stakeholders using text mining and social media analytics?
6. Are you validating the result of your studies and looking for empirical generalizations?
7. Are you incorporating the results of data mining, marketing research and modeling with management subjective judgments using approaches such as the AHP/ANP (http://www.decisionlens.com/)?
8. Are you experimenting with new research approaches such as neuromarketing, biometric responses, prediction markets, mobile approaches and games?
9. Are you incorporating the results in a real time marketing dashboard that incorporates your marketing intelligence and decision support system?
10. Are you assessing the expected value of marketing research before undertaking it, and are you presenting the results as stories?

Figure 1.3 Ten questions that challenge some of the mental models of marketing research

1. *Surveys*. These have historically been one of the major tools of marketing research. Yet, increasingly more and more consumers refuse to be interviewed or cannot be reached, raising the severity of the non-response bias to new heights. Compounding the problem is the increased reliance on two approaches that simplify both the collection and analysis of survey data – the reliance on closed-end questions and particularly Likert-style rating scales. Open-ended questions, and especially those focused on *why*, provide more insightful and valid answers than closed-end questions. Judicial courts, for example, are increasingly relying in their decisions on marketing research studies using open-ended questions, which are less leading and biased.

   If one wants to augment open-ended questions with structured questions, the best way would be to avoid rating scales and rely more on tradeoff questions such as either allocating 100 points among a set of items or engaging the respondents in a conjoint analysis task.

   If your mental model of marketing research is still relying primarily on surveys and in surveys on closed-end, non-tradeoff questions, then it is time to challenge these beliefs and practices.
2. *Internet panels*. The speed and low cost of internet panels have led to their enormous popularity. Yet those agreeing to participate in internet panels do not represent the entire population of interest. While internet panel operators are trying to use demographic weighting, it still does not address the issue that there are (non-demographic) segments who are not represented on the panels. Thus, while internet panels can be used for some purposes (such as comparing the responses of test vs. control groups), projecting the results to the entire universe may be problematic. *If your mental model of marketing research is that internet panels are the solution to all your data collection, you need think again.*

3. *Metrics*. As we move toward the need to measure the effectiveness of advertising and marketing strategies involving various innovative combinations of touchpoints, the traditional measures of mass media are inadequate. Furthermore, despite some innovative efforts to address the measurement and the adoption of standard metrics issues, these have not kept up with the rapid advances of the digital world. *Thus any mental models of marketing research that do not address the implications of the rapidly changing digital world have to be challenged*.
4. *Field Experiments*. As discussed in our earlier section on adaptive experimentation, experimentation is the only valid way to establish the causal link between the marketing initiatives and the market response. Yet, it is surprising how few field experiments are used by firms who are not in the direct marketing area. As the business environment becomes more complex and uncertain the importance of experimentation, and especially as part of an adaptive experimentation philosophy, increases. *Any mental model of marketing research that does not include experimentation has to be challenged*.
5. *Listening*. Listening, and especially real time listening to one's customers, prospects and other stakeholders, is "a must." The amazing and ever-increasing volume of conversations on the social networks coupled with the advances in text mining (digital ethnography) make real time listening feasible and critical. Analysis of the conversations on the social network provides insights that are not biased by leading questions and non-response bias. While not everyone is an active participant in these discussions, the analysis is often based on millions of conversations that can be analyzed in real time and provide management not only insight but also the most effective early warning signals regarding changing consumer attitudes and behavior. For an example of the growing capabilities of these approaches, see Listen Logic (www.listenlogic.com). *If your mental models of marketing research do not include text mining and real time analysis of consumers, prospects and other stakeholders, you must challenge your current mental models and change them*.
6. *Validation and empirical generalizations*. Given the many threats to the validity of data and the validity of any analysis, it is critically important that any mental model of marketing research include explicit focus on validation. Validation should go beyond the typical verification that respondents were actually interviewed (which unfortunately is often referred to by the industry as validation), and include both validation of the accuracy of the data and validation of the analysis. Validating the results on a holdout sample is a good beginning, but efforts should be focused on the search for convergence validity (based on the Campbell and Fiske 1959 philosophy of multi-trait multi-methods). A very powerful approach to validation is the search for empirical generalizations (using meta-analysis and other related approaches) across studies, products, markets, situations and even researchers. Increasingly, the FDA is requiring meta-analysis of all studies, and there is no reason we should not use the same standard in marketing research and modeling. This is especially salient given the recent concern about the inability to replicate published results. See for example Prinz, Schlange and Asadullah (2011), who report that nearly 2/3 of 67 published studies on drug efficacy cannot be replicated. *Thus any mental model of marketing research should include explicit attention to validation and empirical generalization*.
7. *Quantification of subjective managerial judgments*. Often when marketing research and modeling results are presented, the link between them and the final decisions made by management is not clear. To get the most of any marketing research and modeling effort and especially those which incorporate data mining of Big Data, it is highly desirable that management uses approaches such as the Analytic Hierarchy Process or Analytic Network Process (see for example Saaty (2008) and any of the associated software offered by Decision Lens [www.decisionlens.com]) that assists management with incorporating the

results of marketing research, data mining and modeling into their decision processes when explicit consideration can be given to managerial assumptions and judgments. Furthermore, the AHP/ANP allows management to conduct sensitivity analysis on various interpretations of the results of the marketing research and modeling. *Thus, if the mental model of marketing research does not include incorporating it with approaches for the quantification of managerial subjective judgments, the current mental models should be challenged and ideally changed.*

8. *Experimentation with new research approaches*. Recent years have seen an increase in the experimentations with new research approaches such as neuromarketing, biometric responses, prediction markets and mobile approaches. While the jury is still out on the value of many of these and other new approaches, it is important that marketing research include continuous R&D activity searching for new and better approaches. Among the tools largely ignored by marketing research are *games*. This presents a missed opportunity, as game players are often fully engaged in their games both due to the intrinsically addictive nature of the games and the power of gratification. Designing games such that the players' actions reveal their perceptions, preferences and behavior can be an invaluable source of valid marketing research insights. Consider for example the insights one can get into consumer preferences for a car if players in the course of a game will select a car – its style, colors, equipment, etc. *Thus if mental models of marketing research and modeling do not include allocation of resources to R&D, they should be challenged and ideally changed.*
9. *Real time marketing intelligence and decision support dashboard*. As the speed and magnitude of change increases, and the amount of (Big) data grows exponentially, the need for real time information for timely and better decisions also increases. To address this need it is important that the results of data mining, text mining, automatic feeds to ongoing consumer search, media usage, and purchase behavior as well as the results of marketing research and modeling are all integrated in a real time intelligence and decision dashboard. This will help address the challenge of having many siloed data bases (for example sales data separated from CRM and other marketing and advertising data and separated from customer complaints and service). It will also assure that decision makers get the needed information in real time, and that they have the ability to check for consistency across the various data sources and conduct the needed sensitivity analysis. *Any mental model of marketing research and modeling that does not include such a real time decision tool should be challenged.*
10. *Assess the value of marketing research and modeling and present the results as stories*. One of the early principles of marketing research has been that it should be conducted only if the expected value of the research exceeds its cost. Unfortunately too many research projects are undertaken as rationalization for decisions that have already been made and other situations in which the research has questionable value. Mental models of marketing research should include a process to explicitly determine the value of the planned research.

    While this could improve the front end of the research process, mental models of marketing research should also address the fact that the results of too many marketing research studies are presented as Power Point presentations with endless sets of tables and findings that are not acted upon. To address this issue the researchers should consider presenting the results as a "story" that captures the key findings and recommendations. Translating the results into stories and presenting them using animation and other technologies are effective ways to communicate the findings in an engaging way to the managerial audience. *The mental models of marketing research should allow for this neglected step in the research process.*

Challenging, and as needed, changing the current mental models of marketing research and modeling along these 10 points will increase the value of marketing research and should be considered by all involved:

- the users of marketing research – to ensure that they get the most of the research they are paying for
- marketing researchers – to ensure that their research efforts have an impact
- academics who conduct and teach marketing research – to ensure that their research is valid and that the next generation of researchers are up-to-date professionals who create value.

Next steps

The growing segment of empowered and skeptical consumers and the enormous advances in technology that empower them, coupled with the other changes in the global business environment as well as pressure for profitable growth and associated new business and revenue models, challenges all our mental models. The mental models of marketing are particularly under pressure. In the second section of this chapter we outlined some of the challenges to the current mental models of marketing, and in the following three sections we briefly discussed new mental models of marking strategy, advertising and marketing research.

These challenges are of equal concern to both practitioners and academics. The dilemma facing management of all firms and organizations in the marketing area (and all business domains) is how to move forward in implementing some of the proposed changes to current mental models. Based on our experience in challenging the mental models of a number of firms, a process that works includes:

1. Identify your key challenges, the approach you take today to address the challenges, and the mental models underlying these approaches. For example, if your challenge is recruiting the right talent, and the approach you use relies on your own personnel to recommend and enlist their friends, the underlying mental model is that the competencies you will need in the future are reflected in the talent pool of your own people.
2. Once you identify the key mental models underlying your strategies and activities, it's time to challenge them. There are numerous approaches one can use to challenge mental models. Illustrative approaches include: challenging the validity of your assumptions; visualizing the future, and checking to what extent the current strategies can lead you to this desired future; idealized design, in which you imagine that your current organization is destroyed and you have to design a new one; the use of metaphors; and even travel. (For a discussion of these and other approaches to challenge one's mental models see Wind and Crook 2004; Wind and Fu 2013). This phase typically results in the development of a series of alternative mental models to the current one.
3. Once you have a number of alternative mental models, the next phase is to evaluate their pros and cons and test them vs. the current mental model to decide whether to revise the current mental model to incorporate some aspects of the new models, or to replace it entirely. The testing is best done as experiments.
4. Once a revised or new mental model is selected, the implementation phase is basically the same as any organizational change and transformation.
5. Finally, develop a process to allow for continuous challenging of the new mental model, assessing the degree to which it can address the changing business environment.

The success of this process depends on the will and courage of management in championing and leading it and in their ability to get the needed buy-in from all involved.

The challenge to the mental models of marketing strategy, advertising and marketing research offers unique opportunities for innovation and creative collaboration between industry and academia, as evident in the Wharton Future of Advertising Program, which includes over 75 industry leaders (http://wfoa.wharton.upenn.edu).

The challenges to marketing outlined in this chapter are based on the premise that the enormous changes we face do not pose a threat, but an opportunity to revitalize marketing and increase its relevance and impact on business, society and our lives. The innovations we experience every day from Google, Facebook, Twitter and numerous other innovative firms and individuals, and *the changes we advocate, suggest a new marketing paradigm that is the beginning of the golden age of marketing.*

Note

1 This section is based on the work of the Wharton Future of Advertising Program as reported in Wind and Gardner, "Portfolio Orchestration: Toward a New Advertising Model" (2013) and in Wind and Hays, "Advertising 2020: Guidelines for Today's Advertisers" (2013).

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2

New philosophical paradigms in marketing

From amoral consumerism to axiological societing

George G. Panigyrakis and Anna Zarkada

Follow your heart as long as you live!
Put myrrh on your head,
Dress in fine linen,
Anoint yourself with oils fit for a god,
Heap up your joys,
Let your heart not sink!

Harper's Song: Tomb of Intef

Abstract

Starting with the philosophical correlations of key marketing concepts (needs/wants/desires) which serve as the backbone of consumerism, today's dominant ideology, this chapter seeks to outline the implications of the present economic crisis and the possible effects for the future of consumerism as well as the marketing discipline itself. Philosophical ethics and economics appear to be parting their ways in affluent societies. The separation of marketing from economics, its subsequent development as an independent field and its focus on the individual behavior alone have resulted in an overemphasis on individual desires at the expense of value. Thus, consumption is not being held responsible for collective welfare and the achievement of social objectives. The chapter argues that the ongoing crisis in the modern world is unique in that it signifies a possible end of the "false desires" based consumer culture edifice alongside the bubble finance-driven economies. Reforms in the way we see marketing and consumption are necessary in order to reduce and diversify the Schumpeterian (1947) creative/destructive effects of evolutionary forms of the present economic system, while fulfilling the Aristotelian economic ideal of creating wealth, in such a way as to make every individual a better person and the world a better place to live, rather than just to consume in.

Key words

Philosophy and marketing, ethics, needs, desires, global financial crisis, value, consumerism.

Introduction

The view of consumption beyond sustenance and life preservation as a matter of the "heart" and a process of heaping up individual joy is as at least as old as recorded civilization. Similarly, the study of consumption and humans as consumers is one of the oldest intellectual pursuits which, having drawn on a multitude of disciplines, has been formalized as a field that came to be known as Consumer Research; a field so broad that "it stands for everything, which in this case is tantamount to nothing" (Holbrook 1987). Only a little over a decade ago consumption was still described as "a poorly understood phenomenon" (Wilk 1999, p. 1) with ambiguous boundaries between the decision-making process and its abstractions (Shocker, Ben-Akiva, Boccara & Nedungadi 1991). Despite the proliferation of consumer research addressing the social and cultural influences on human behavior, as well as significant advances in the study of the experiential, symbolic and ideological aspects of consumption, the end result is "more obfuscating than clarifying" (Arnould & Thompson 2005: 868). This is caused by paradigmatic incoherencies (Holbrook 1987; Wilk 1999, 2002) and results in ineffective policymaking, with regards to curtailing consumerism and environmentally harmful consumption (Wilk 1999), and inefficient marketing actions with regards to turning potential to buying and loyal customers (Shocker et al. 1991). What is more important, the marketing discipline appears to have shown little concern to limiting the damage caused to the social and physical environment by its processes, products and by-products and to have taken an amoralistic stance to consumption.

In answering the question "*what is consumer research*?," Holbrook (1987: 131) equates our lives with the "pains and difficulties imposed by prices and budget constraints" and the "existential anguish in choosing among products, none of which is perfect" and describes "the human condition [as] an imperfect and tainted world in which consumers can only strive to surmount their constant barriers to fulfillment." Like all other social sciences, the fundamental responsibility of marketing is acknowledged to be the making of the world into a better place for people to live happier lives in. It is just that for marketing, "the State of Paradise" is described as that "in which Adam and Eve's sole task was to enjoy pleasant forms of consumption."

It follows that, since consummation is to be found in consumption, the task of our discipline is to employ macro and microeconomics, psychology, sociology, anthropology and humanities (Holbrook 1987) in order to study the social, cultural, economic and psychological aspects of consumer behavior as independent variables, givens beyond moral judgment, with the aim of increasing consumption, irrespective of the consequences of consumerism (in the sense of the dominant social and economic order that encourages the purchase of goods and services in ever-greater amounts) for the lives of other people and future generations. In this framework, the role of philosophy has been dismissed as being of limited scope; praxeology is seen as an inadequate basis for a consumer theory of reasoned action, ethics as confined to addressing "phenomena of consumer misbehavior" and the philosophy of science as a source of glimpses into "approaches that depart from the prevailing tendency toward logical empiricism" (Holbrook 1987: 130).

We believe that this economic order has now come to a point where the consequences of its amoralism are too deep and painful to ignore. Moreover, the marketing discipline has reached maturity (if it has not already taken the downward slope of its life cycle) so it is about time it re-examined itself and its societal function. Philosophy, both in the sense of "the critical study of the basic principles and concepts of a particular branch of knowledge, especially with a view to improving or reconstituting them" and as "a system of principles for guidance in practical affairs" (Dictionary.com, 2013) has a lot to offer to this immediate and important task. We propose that the time has come for the discipline to focus on its philosophical foundations,

which have been largely ignored, in order to identify how it has contributed to the formation of the social, cultural, economic and psychological conditions in which it operates, with a view to claiming a place as a positive force of change in the constellation of social sciences. In the discussion that ensues, we propose that consummation does not come from the incessant pursuit of satisfaction through materialism but is attained through virtue and good judgment, so we see our role as to seek what is good for people, not just their bellies; *hominis bonum quaero, non ventris* (Seneca, 50 BCE / 2004: 56).

A brief review of the framework in which the marketing discipline has been operating

In the span of modernity's five centuries, the world has witnessed increased levels of production in the hands of fewer and fewer owners who are strictly separated from the working class. This period saw the development of society around production under a strict division of labor which resulted in workers being isolated from both the products of their labors and other workers. The dominant form of social organization changed from that of feudal communities to the one of nuclear families living under the protection, or the domination, of diverse political leaderships.

Mass industrialization was ideologically bound to grand theories with a common focus: that progress and welfare could only come through material goods (van Raaij 1993). From the 19th century, ideas were also mass packaged and delivered in the concentrated and easily digestible form of a variety of *-isms*. Since the middle of the 20th century oppressive ideologies have been further compressed into an amalgamation of shreds of lost utopias and fantasies of globalism; fragments of cultures that came to be known as Pluralism (Lyotard 1984).

On a micro-scale, families have been evolving into new and fluid compositions, thus altering the structure of the consumption decision-making process without challenging its fundamental objective of happiness through having. On a macro-scale, supra-national organizations seek to evolve global forms of governance (Mandelson 2009) and even statesmen have been issuing a "clarion call" for the re-examination of the role of the nation-state (Papandreou 2010; Wiesmann 2011; Μουτζουρίδης [Moutzouridis 2012]. So far, however, the world has yet to witness the "invisible hand" (A. Smith 1761, 1863) "make nearly the same distribution of the necessaries of life, which would have been made, had the earth been divided into equal portions among all its inhabitants." It appears that Smith's (1761: 273–274) fundamental assumption that "the capacity of [the proud and unfeeling landlord's] stomach bears no proportion to the immensity of his desires" does not hold for the Transnational Corporation, the post-industrial equivalent of the "landlord."

Although the masses have been acquiring ever increasing amounts of a variety of coveted material possessions, their collars have turned from blue to white and the object of their labor has become information and images, rather than machinery and material product, the bases of social organization have not been challenged and the power structures of modernity seem to be, if anything, more firmly entrenched. After the early sixties, with the emergence of the pop-art movement, the important segmentation between those that own the means of production and those that live to consume was spread by other means.

In the 1970s and 1980s, freedom of speech, the right to self-expression, the validity of individual subjectivities and experiences and the value of tolerance of the "other" were hailed as the post-materialistic values of the May 1968 generation (Cahoone 1996; Kvale 1995; Sternberg 1995; van Raaij 1993) that was to live in harmony with itself and the world through tolerance of the incommensurable (Lyotard 1984). The "cognitariat of office workers," a "para-class" of information handlers (van Raaij 1993), has been consuming grand narratives, such as liberation,

equality and progress in a manner similar to choosing a different breakfast cereal variant off the supermarket shelf every week; with eclecticism and the self-parody of fashionable postmodernity. As people are eagerly sharing the illusion of empowerment and affluence, 20th-century philosophers enter the discourse of consumption, with Lyotard, Derrida, Habermas, Foucault, Arendt and Baudrillard (Featherstone 1990) leading the way in calling for a re-examination of the "conjoining of the ephemeral and fleeting with the eternal and immutable" (Harvey 1989: 10) and guiding explorations of how the new media are creating new audiences and publics and changing the social and cultural life through the emergence of symbolic space (Rotaru, Nitulescu & Rudolf 2010) as well as studies of consumption as self-expression (van Raaij 1993).

For many years, an inside-out approach to the marketing concept has prevailed in practice, even though the logic of marketing calls for an outside-in approach (de Chernatony, Veloutsou, Christodoulides & Cottam 2009); thus, resulting in an alienation of marketing from the real needs of the society it is meant to serve and feeding grass-roots anti-marketing movements (Badot & Cova 2008; Kotler 1971; Kozinets & Handelman 2004). We hereby explore value and values as the driving force behind a move to achieve a re-alignment between marketing and society as, in order for citizens to respect marketing, marketing has to offer the world good reasons to be respected.

Needs, desires or "needs and desires" or is it just value?

In seeking to understand what people consume and why, a contestable (Tadajewski & Jones 2011) but nevertheless extensive (Wilk 1999, 2002) discourse has evolved around the distinction between "real" needs and "false" desires. Generally, "real" needs are thought to be the ones that reflect "natural propensities" (A. Smith 1863). These are seen as being either unlimited as neoclassical economists assume or manageable through discipline and devotion (Horsfield 1987). "False" desires have been described as injected by various external agents such as the devil (Ali 2000), modernity (Scanlan 1967) and capitalism (Petrovic 1991) or contextually determined as posited by theories based on psychology, sociology or culture (Wilk, 1999, 2002).

The clear division of the human emotions governing consumption on the basis of their authenticity, with an authentic emotion defined as the one that has a clear biological base, has been seen as "[a] key ethical issue" (Wilk 1999: 4). To describe the distinction between natural need and false desire, as an ethical issue, is essentially to be judging the first as being good and the latter as being bad. To the discipline of ethics, however, needs are neither distinguished from wants, nor usually discounted as "fake," bad or unnatural.

Pre-modern philosophical approaches to human needs and desire

The key issue in both western and eastern pre-modern traditions, as well as in early philosophical ethics, is not the distinction between needs and desires, but the delineation of human desire within the conventions of the social contract or divine commandments (Midgley 1991).

Plato is the first among many, in the western formal philosophical tradition, to explore the emotional nuances of desire using thirst as an example, thus, refuting the distinction between real and fake needs. He acknowledges desire as a state which is not directed at any specific kind of satisfaction medium. Thirst itself, he says, is thirst for drink itself, and not for any special kind of drink; is not "for hot drink, or cold drink, or much drink, or little drink, or, in a word, for drink of any specific quality" (Irwin 1995). He is not, however, satisfied with this purely semantic analysis and reads some psychological meaning into it, so he adds that "nobody wants drink, he wants good drink." He takes his argument further by observing that "sometimes, thirsty men are

unwilling to drink." Thus, he clearly sets the foundations for understanding consumption in that he acknowledges that there is in the human being something that commands and there is something, be it reasoning or emotions such as disgust or fear, that forbids (Πλάτων (Plato) 2002). For Plato, neither desire nor inhibitions are real agents. "There is only one agent, the man. However much his passion excites him, overwhelms him, carries him away, it is not another agent carrying him away. … [W]e find it very convenient to have nouns, 'reason' and 'desire', by which to refer to these events as if they were the work of some agents other than ourselves, advising or pressing or assaulting us as other men advise and press and assault us. But in truth there is no agent here but ourselves" (Robinson 1971: 47). So it is not the desire that is to be morally judged, not even the reaction to it, but the agent.

Aristotle also uses one word, desire (ὀρεξις), to denote both the "rational appetition of the good" (βούλησις) and "any non-rational appetition of the pleasant" (επιθυμία) (Aristotle 1954: xxvi). Thus, Aristotle identifies reason as the criterion by which we can distinguish different types of motives, but consistently uses the generic term desire throughout his reasoning. Moreover, he uses the word κακία (which has survived into modern Greek as malice but is usually translated in English as vice) to denote failure to enjoy pleasures in moderation. Keeping the focus on the agent, Aristotle follows Plato in seeing motives and the acts as devoid of moral content but identifies excess, which he suggests is a character flaw, as the moral issue.

In the Christian tradition, the legacy of Aristotle re-appears in medieval times, through the work of Pierre Abélard, the French scholastic philosopher, theologian musician and logician, who considers both natural inclinations and desires as morally neutral and proposes the agent's intentions as the object of moral assessment (Haldane 1997). In the Age of Enlightenment, David Hume, the Scottish historian, economist, essayist, and philosophical empiricist and skeptic, takes the argument further by identifying all kinds of physical or psychological desires as states that represent wishes or fantasies of how the agent would like the world to be, thus, placing desires not only beyond the scope of moral but also of rational criticism (M. Smith 1997).

Modern philosophical approaches to human needs and desire

Modern moral philosophy (from the 1780s onwards) broke from the tradition of focusing on the moral agent and thus, issues of character or disposition, as well as the structure of desires became "at best a peripheral rather than a central topic" (MacIntyre 1982: 95). The centrality of the agent is re-instated in meta-ethics, the body of theories *about* rather than those *of* ethics, such as normative and applied ethics (Singer 1991) seeking "to understand the metaphysical, epistemological, semantic, and psychological presuppositions and commitments of moral thought, talk, and practice" (Sayre-McCord 2012).

For ethical realism, for example, desires do not purport to represent the world as it is, so they are "not assessable in terms of truth and falsehood" but simply a statement of fact and "*in themselves* (*sic*) are all on a par, rationally neutral" (M. Smith 1997: 400). This notion is taken even further by subjectivism, which sees moral judgment itself as just an expression of the agent's desire (Rachels 1997). Contemporary Christian theology also refrains from distinguishing between needs and wants and seeks in scripture, tradition, experience and reason to find a basis for controlling the acting upon human desires by taking into account respect for the intrinsic value of all creation (e.g. Zaleha 2009).

In contemporary moral philosophy, the question is not the nature of desires but, in the absence of divine command, "how are we to know whether our desires are misguided or sound?" (Schneewind 1997: 147). As there are almost as many different answers as there are philosophical, religious and ideological streams of thought readily accessible, it appears that the western people

of the late 20th century have resorted to a "pastiche & collage" (Kvale 1995: 23) morality which seems to be assembled on a shoestring budget of learning and mental effort; "the predicament of moral modernity" (MacIntyre 1984: x).

It was another Scot, Alasdair MacIntyre, who, building on Elizabeth Anscombe's denouncement of dogmatic views of morality as unattached to human needs or desires, revived Hume's approach and resolved this predicament by demonstrating that the incommensurability of rival ethics traditions is grounded in their historical roots and need not entail relativism or perspectivism (MacIntyre 1988).

MacIntyre's virtue theory, a contextualized reading of Aristotle (MacIntyre 1982, 1988), Thomas Aquinas (MacIntyre 1984, 1988), Augustine and Hume (MacIntyre 1988), emphasizes the need to focus the moral judgment on the person. MacIntyre (1982, 1984) re-introduced us to the moral agent by elucidating Hume's thesis that "direct passions" i.e. "desire, aversion, grief, joy, hope, fear, despair and security" are but one state, the "I want" emotion, which precedes not only action but also reasoning. Centralizing the moral judgment on the agent's character, thus, results in an analysis of consumption patterns not in terms of the "naturalness" of their emotional motives, but in terms of "traditional vices, such as inordinate desires for drugs, money, food or sexual conquest, i.e. the traditional vices of intemperance, greed, gluttony and lust" (Pence 1997).

From philosophy to consumerism

Moderation, the avoidance of extreme excesses, was the criterion separating legitimate from frowned-upon economic activity, from Aristotle in the 4th century BCE until Adam Smith in the nineteenth century; that is for as long as economics and ethics trod the path of knowledge together. It was the legitimization of excess that became the foundation of contemporary economics, the offshoot of ethics that has become increasingly alienated from its roots and thus self-consciously non-ethical in character (Sen 1988) or, as is the case with the dominant neoclassical paradigm, consciously and purposefully amoralistic (Etzioni 1988). Amoralism has been repeatedly identified as one of the most important deficiencies of contemporary economic theory (Etzioni 1988; Schumacher 1973; Sen 1988).

From philosophy to economics

Thales of Miletus, the founder of the western philosophical tradition and one of the Seven Sages, demonstrated that philosophy can be practical and useful by setting up a profitable olive processing monopoly in Chios and Miletus. He was very poor but "showed the world that philosophers can easily be rich if they like, but that their ambition is of another sort" (Aristotle 1959: 1.1259a; Russell 2004/1946: 45).

Aristotle celebrated οικονομία (the linguistic root of economy, literally meaning household management) as essential to the working of society. He described household trading as a form of practical wisdom, one of the most highly esteemed of capacities and a virtue concerned with man himself (Aristotle 1954). He also condemned χρηματιστική (chrematistics), a term he borrowed from Thales to denote both the money trade in general and excessive profit, for being "wholly devoid of virtue" (R. C. Solomon 2004: 1022).

In Aristotle's pursuit of the "object of life," moderation is the key to happiness as, regardless of the economic system, it is possible for the virtuous to simultaneously create wealth, be ethical, and be happy (Stachowicz-Stanusch & Wancel 2012). The notion that desire and the actions taken to fulfil it are acceptable only to the extent that they are temperate and the subsequent

disdain for moneylenders and merchants seeking profits beyond a reasonable wage for their efforts has been carried forward by St. Thomas Aquinas, who only accepts a small charge for "lost use" of loaned funds as legitimate. Calvinism also supports industrialization with the proviso that production and trade are delineated by thrift, sobriety and responsibility (R. C. Solomon 2004). Thus, up until the official birth of modern economics, economic thinking was guided by the Aristotelian "ideal of creating wealth in such a way as to make us better people and the world a better place" (Nielsen 2010: 299).

Ethics and economics appear to be parting their ways with Adam Smith's (1863) acknowledgment of the unbridled profit as not only the driving force but also a primary virtue of modern society, a belief reflected in 22 definitions of economics that have survived into 21st-century academic literature (reviewed by Mofid 2005). It was first John Kenneth Galbraith in 1958 who brought back the distinction between satiable physical needs and insatiable "psychologically grounded desires" whilst declaring speculation on "the comparative cravings of the stomach and the mind" (Galbraith 1998: 117) or the intensity of the pain caused by "the deprivation which afflicts [the consumer] with envy of his neighbor's new car" (ibid.: 124), as both useless and unscientific. So, wants are "given data for the economist [whose] task is merely to seek their satisfaction" by "maximizing the goods that supply the wants" (ibid.: 117).

In affluent societies, corporations stimulate consumer demand through persuasive advertising and a variety of salesmanship, public relations and, recently, not only physical but also virtual social media activities that allow them to generate mass profits and minimize risk. Galbraith believes mass media to be an instrument for manipulating the masses into accepting the "magical properties" of advertised products (M. Solomon, Bamossy, Askegaard & Hogg 2006: 23), underlines that higher demands are the consequence of manipulation from the supply side and introduces the term "dependence effect" to describe how, either passively or actively, as societies are becoming more affluent, "wants are increasingly created by the process by which they are satisfied" (Galbraith 1998: 129). This process results in an indeterminate, but nevertheless "substantial" part of the goods produced having a totally contrived demand, which would vanish were it not for the efforts of marketing.

Nevertheless, to contemplate "the importance or virtue of the wants to be satisfied" (Galbraith 1998: 130) is not the economist's responsibility or even a legitimate pursuit for the discipline. Forty years after the first edition of *The Affluent Society*, Galbraith (ibid.: 130) still insists that being concerned with the intentions, means and ends of marketing would be entering "into dubious moral arguments." This stance is also shared by Schumpeter, as well as most modernist economists, who believe that there should be a clear separation of economics and the study of the moral issues structurally related to capitalism from the economist's ethical judgments about those issues (Nielsen 2010).

From economics to marketing

Modern marketing, in a manner similar to economics (its conceptual forefather), is but another approach to individual problem-solving that sees "each party to a market transaction … as a means whereby the other may advance his ends" (Alderson 1952). It rarely distinguishes between needs and wants and when it does it attempts (implicitly rather than explicitly) to categorize them as superior or inferior. More often than not, marketing scholars have, in the past few decades, articulated and elaborated the relationship between the discipline and the function with consumers, but have largely eschewed the examination of needs and desires in terms of their rationality, let alone morality. Instead, from the earliest works published in dedicated marketing

journals, the key construct of their explorations is described as "needs *and* desires" (Benson 1937; Churchill 1935; Crossley 1937; Nash 1937) or "needs *and* wants" (Hess 1935; Tosdal 1936).

As the discipline starts to focus on "the man or woman who buys the product, [as] the absolute dead center of the business universe" (Keith 1960: 35) and to position the fostering of the relationship with the consumer as the primary objective of business strategy (Grönroos 1994, 1996), it is still "needs and desires" that "are and should be *the (sic)* reigning criterion" (Firat & Dholakia 2006:127).

Coining terms such as "needs *and* desires," however, creates a paradox whereby the use of two words instead of one – for example, just *needs* (Maslow 1943, 1970) or just *desire* (Aristotle 1954) – implies that marketing needs to address two distinct problems joined by a linear chronological or hierarchical relationship but, then, because the two appear together, it is also implied that they need to be simultaneously addressed. That this paradoxical approach could be problematic has been acknowledged by Arndt (1978), who proposes the "level of specificity" as the criterion for the distinction between needs and wants. In Arndt's scheme, personality (the innate variable) and culture (the situational variable) determine needs, which are matched with a "product group" on the supply side. Social influences and consumer resources on the demand side move needs one level up, thus turning them into wants that are matched to product class on the supply side. Finally, the highest degree of specificity is introduced by the competitive environment, which facilitates the match between wants that have turned into specific demand with the brand or variant.

Arndt (1978: 102) thus proposes what looks like a synthesis of the naturalistic (exploring the innate impetus of consumption) and the situational (explaining consumption as the product of its historical, sociocultural and economic context) perspectives. His definition of needs "as being the broadest and most basic physiological and psychological requirement for a person's well-being" is also adopted by Zeithaml, Berry & Parasuraman (1993). This definition is consistent with motivation theory (Maslow 1943).

Motivation theory, however, refrains from distinguishing needs from wants, desires, expectations or any other state and also makes no distinction between "the so-called physiological drives" (Maslow 1970: 15) and the emotional ones. Needs are experienced through the senses and "a person who is thwarted in any of the basic needs may fairly be envisaged simply as sick or at least less than fully human" (ibid.: 30). Maslow (ibid.: 30) ponders a question similar to Galbraith's (1998): "Who will say that a lack of love is less important than a lack of vitamins?" thus, echoing Aristotle's belief that 'ὄρεξις' (which means "appetite" but Vargo, Maglio & Akaka (2008) translated as "need") holds the process of exchange together but cannot be objectively measured.

Much as Maslow's pyramid has been quoted, however, the notion of a generic *need* was not taken up by the generalist and mainstream scholastic marketing community and the "needs and wants" or "needs and desires" terms not only survived for almost a century, but were and still remain the norm. A search of marketing journals on Google Scholar (the search terms were "consumer behavior" OR consumption OR consumers AND containing the term "marketing" in the journal name) identified 398 articles using the variant "needs and desires" (35 of which in 2012) and 1,480 articles (141 of which in 2012) using the term "needs and wants." There also appeared some more complex and equally problematic variants such as "needs, wants and desires" (56 articles in total and one in 2012) and "needs, wants, desires and expectations" (Grönroos 1996; Wise & Sethi 1990).

The use of a sequence of ordered terms as a construct can also be interpreted as a narrow reading of basic motivation theory which has since the 1950s, when Maslow's *Motivation and Personality* was first published, resolved the issue of needs, their nature and their ordering. Even though Maslow's (1943) pyramid has been acknowledged as a "venerable" pedagogical tool but

dismissed as "probably largely irrelevant in a developed society" (Achrol & Kotler 2012: 47), we hereby argue that several key points have largely been ignored despite the fact that they make a significant contribution to consumer research.

Needs are not necessarily saturated by consumption. As a matter of fact, only a few simple ones actually are. It is true that needs are "organized into a hierarchy of relative prepotency" (Maslow 1970: 19), but the order is not rigid, let alone fixed. Contrary to popular elaborations, all levels of the much quoted pyramid are physiological *needs* (Maslow 1943), largely unconscious, more often than not partially fulfilled in normal individuals, and coexisting in determining human behavior. It is also critical to note that average behavior is simultaneously coping (i.e. purposive goal seeking) and expressive (i.e. the simple reflection of one's personality that does not actually try to do anything).

Also pertinent to consumption research is Self-Determination theory (Deci & Ryan 2000) which also sees motivation as innate (or so well internalized that motives are experienced as important) and explains the content and process of goal pursuit by adding three more categories of needs that also follow mechanisms similar to the ones discussed above. The need for competence (to experience achievement), autonomy (to have control over circumstances), and relatedness (to be connected to people and groups) have been shown to motivate people to engage in activities aimed at achieving optimal psychological health. It could, thus, be inferred that consumption, like any other human behavior is "over determined or multimotivated" (Maslow 1970: 29) and, we hereby argue, not amenable to being organized into orderly sequential schemata.

Moreover, as the order of the words (needs → wants → desires → expectations) remains constant, the impression that there lurks some kind of implicit value judgment on the relationship between the terms is intensified. This ordering may very well reflect unresolved debates in other disciplines, for example, Sartre's identification of need as an element of the human condition (Butterfield 2004) and desire as the development of a physical need "through a growing awareness of the existential choice between a desire to have and a desire to be, desire being defined by absence or lack of being" (Elliott 1997: 292). It can also be attributed to the influence of Marxist critiques of capitalism, as a creator of false "needs" (Arndt 1978) that are alienated and thus, difficult to distinguish from needs common to all humans (Butterfield 2004) thus leading to a dismissal of "conscious choices about consumption as 'false consciousness'" (Elliott 1997: 293).

However, as thought provoking as they may be, these debates are beyond the scope of the present discussion. We hereby argue that to avoid taking an explicit stance on the criterion used for the arrangement of the words is as clear a manifestation of a purposefully chosen stance of consumer amoralism as the missing word "values"; it seems as if people are consumed by the desire to consume, without ever seeking recourse to their beliefs about what is importantly right or wrong about their choices. Perceiving consumers as inherently immoral, of course, can provide ample justification for conceptualizing marketing as needing to be amoral.

It is only very recently and rather tentatively that concerns over "the moral constitution of consumption and the nature of moral dilemmas and challenges that the commercialization of everyday life, including its most intimate moments, pose for consumers" are acknowledged as "an intriguing issue, still in its theoretical infancy" in consumer culture theory (Arnould & Thompson 2005: 876). Even though it is was almost 30 years ago that Smith and Quelch hailed the coming of the marketing "ethics era," which would be replacing the "greed decade of the 1980s" (1993: vii), we are still to see it really happening, at least in academia if not in practice.

As Schlegelmilch & Öberseder's (2010) exhaustive literature review demonstrated, between 1960 and 2008 there were only 538 articles on marketing ethics published in 58 (including the

ones dedicated to business ethics) journals and only about 40 of them (eliciting a mere 500 citations) were concerned with the ethics of consumer behavior. Since 2008, there have been another 20 journal articles on the ethics of consumers as a decision-making variable. Interestingly, marketing amoralism is ever present, even in studies of ethical consumption. Jägel, Keeling, Reppel and Gruber (2012: 391), for example, propose that clothing firms adopt a combination of "quality materials with modern, yet timeless design … so that clothes support *identity* and *communication* needs as well as *utilitarian needs*" in order to "help consumers 'balance' their individual needs and desires and their *ethical concerns* [emphasis added]," thus affirming that to be ethical is neither a *need* nor a *desire,* but an abstract judgment about right and wrong, almost external to the agent. Finally, there is still a dearth of normative work (Schlegelmilch & Öberseder 2010), a finding consistent with the prevalent amoralism of marketing discussed here.

Postmodernity: from marketing to consumerism

We hereby argue that the amoral celebration of individuality and excess is the philosophical basis of consumerism. By consumerism, we mean both the Keynesian macroeconomic policy-making emphasis on consumption as the path toward economic development and prosperity (Horwitz 2012) in the "belief that the free choice of consumers should dictate the economic structure of a society" (Whig 2012) – which would, ideally, result in von Mises' 2000/1962) "democracy" whereby the "regular fellow" is "called upon to determine ultimately what should be produced, in what quantity and of what quality, by whom, how, and where" so that the market resources end up being "allocated to those who value them most and who are prepared to make the greatest sacrifices to acquire them" (Whig 2012) – and Veblen's (1998/1899) "conspicuously wasteful honorific expenditure [that greatly exceeds] the 'lower' wants of physical well-being or sustenance only" – which results in the social order of keeping up with Joneses, whereby society is collectively geared towards the purchase of goods and services in ever-greater amounts.

Consumerism has been identified as a dominant ideology (Lodziak 2002; Maycroft 2004) that sees markets as meritocratic, thus covering their function as oppressive mechanisms (Maycroft 2004) and as agents of social change. Consumerism values competition and disconnection more than community, spirituality and integrity (Levine 2007). It supports the production of ostensibly purposeless debris and a false sensuality with profound psychological effects, such as a "collective aesthetic unconsciousness" and a forfeiture of actual physical pleasure (Harris 2001: x).

Postmodern thinkers, like Baudrillard, see needs as guiding forces toward "fantastic cages" of consumption, that people are made to believe will provide them with the satisfaction they crave for. Thus, instead of desiring and consuming goods themselves, people seem to be desiring desire and consuming the promoted meaning of goods (Baudrillard 1988/1970; Elliott 1997). Hence, marketing creates powerful images that are desirable because, as Lacan explained, they reside in the gap between language and the unconscious and thus, they feed desire for the sake of desire (Elliott 1997), which has become decentered, as the biological needs of the individual have become subordinated to the recognition and love of other people.

In a time of incessant choosing when orthodoxies are challenged (van Raaij 1993) by the pluralism of cultures and of knowledge (Rotaru et al. 2010) couldn't it be possible, in a manner similar to the multitude of traditions, that each has some validity, but none comes up as dominant (Walter Truett Anderson 1995), that all needs, and wants and desires, irrespective of their being real or imagined, innate or constructed, can be equally valid?

Pierre Bourdieu (1984) re-introduced the Aristotelian concept of ἕξις (literally meaning habit) into the sociology and anthropology of consumption. He posited that needs are

experienced as a function of the taken-for-granted of natural, bodily experience which is felt, not spoken. He called this "the habitus" and described it as largely class orientated and embedded in values (Gasana 2009; Wilk 2002). A need expressed in narrative or image, with image being the dominant form of expression in our times, according to Baudrillard (Rotaru et al. 2010), "has moved from the realm of the habitus, into the conscious and contested area of discussion" (Wilk 2002: 10). Bourdieu (1984) has used the term heterodoxy to denote the enunciated need. When debated and contested, it becomes taste, a want that combined with the ability to demonstrate taste through consumption differentiates the classes, a notion first introduced by Veblen (1998/1899). Thus, the prominence of economic or cultural capital becomes central to the class system as it provides the basis for constructing distinct lifestyles (van Eijck & van Oosterhout 2005).

Despite criticisms of Bourdieu's (1984) analysis of the balance between material and cultural consumption as the basis for class distinction as well as some empirical evidence which questions the generally accepted correlation between affluence and consumption of "high-brow" culture (van Eijck & van Oosterhout 2005), the conceptualization of postmodern marketing as a reversal of the industrial logic of production (Sternberg 1995) has not been contested.

In their analysis of communication under the lens of postmodernism, Rotaru et al. (2010) present Lash's, Baudrillard's, Bauman's and Lyotard's perspectives on the speech/ image balance in contemporary technology driven societies and highlight, again, the impact of mass culture and consumerism on our inability to maintain authorities and to assign its distinctive role in high culture (Rotaru et al. 2010). Throughout the writings of postmodernists, as well as in our everyday experience, it appears that pluralism (Lyotard 1984; Millhous 1999; van Raaij 1993) and the disjointed significations of wealth and prestige attained by elites that "succeed in cornering the phantasmagoric resource that elicits viewers' desires and fears" (Sternberg 1995: 85) is the dominant mode of existence.

Marketing (and for this discussion it is immaterial if it was created *per se* or emerged from Sternberg's (1995) iconic capitalism) is about the consumption of dreams and fantasies, with products providing the missing bits of information that anchor the image to an exchange mechanism which can no longer be explained by the dismal science of modernity. There are numerous competing discourses on the meanings of consumption (Arnould & Thompson 2005) and a multitude of approaches to resolve their tension by applying analytical frames borrowed from other disciplines (see for example Elliott 1997: 286 who proposes five distinctions: the material versus the symbolic; the social versus the self; desire versus satisfaction; rationality versus irrationality; and creativity versus constraint) in order to find ways to control the massive changes in consumer culture that result for the dematerialization of cultural goods (Garcia-Bardidia, Nau & Rémy 2011), to explore the manager–customer cocreation of identities and meaning through luxury goods (Roper, Caruana, Medway & Murphy 2013) or to challenge the gender schema congruity on brand usage (Oakenfull 2012), to name some of the more recent academic pursuits.

This inherent multiplicity as well as the variety of perspectives that have been adopted in the study of consumption and the deep embeddedness of marketing in "G-D [goods-dominant] logic-based economic theory with its co-supportive concepts of embedded value (production) and value destruction (consumption)" (Vargo & Lusch 2008a: 255) can be viewed as the underlying cause or the lack of unifying theories of consumption (also identified, for example, by Rotaru et al. 2010; Wilk 2002). Moreover, the traditional emphasis of the 20th century on empirical generalizations based on quantitative analyses (Tamilia 2011), which have been so much venerated as to be described as the sole path to scientific knowledge, in contrast to the limited value of practical problem solving offered by "everyday" and "interpretative" knowledge (Calder & Tybout 1987), has intensified the propensity to develop different models for different

decision contexts (Shocker et al. 1991; Vargo & Lusch, 2008a; Wilk 1999). In retrospect, this tendency seems to result in the discipline's fragmentation but, most importantly defeats the purpose of modeling itself which is primarily to know rather than to predict (Tamilia 2011).

From consumerism to metamodern societing

A reconceptualization of consumer behavior around value cocreation

It is here argued that the reasons behind consumption are so diverse, variable and esoteric, as fluid as time and space, and totally dependent on the specific nexus of the person, the object and the context as to be rendered totally immaterial and thus, incommensurable to modeling, at least by the tools the marketing discipline has had at its disposal in the modern and postmodern milieu. To demonstrate our argument that postmodern consumerism, as a series of identity-building projects, has come to resemble Jameson's (1990) description of the postmodern cultural production as the schizophrenia-like collapse of the signified–signifier chain caused by moving from one signifier to the next, chasing the endlessly reproduced signs that end up as a "rubble of distinct and unrelated signifiers" and an experiencing of one's history as "a series of pure and unrelated presents in time" (pp. 26, 27), we hereby list some of the most common consumption motives found in the post postmodern (also referred to as metamodern) 21st-century literature.

Consumption has been seen as a mechanism to quell senses of the body, of the psyche and the soul within reference standards constructed on the basis of (a) past or current social experiences (Gasana 2009), (b) virtual group membership (Muniz, Albert & O'Guinn 2001) or (c) brand related professional networks (Andersen 2005). Consumption can also be the consumer's conversation with (1) a firm on the common grounds of their respective identities (Searls & Weinberger 2001; Stokburger-Sauer, Ratneshwar & Sen 2012) as, for example, in response to country-of-origin effect (Sanyal & Datta 2011; Wu 2011), (2) with a prospective mating partner (Sundie et al. 2010), (3) with the self in an attempt to construct an identity (van Eijck van Oosterhout 2005) that transcends reality and projects the consumers as the beings they would like to be (Bauman 2011). Finally, consumption has been conceptualized as a mechanism to alleviate existential angst (Rindfleisch, Burroughs & Wong 2009) or to reach the innermost, as in seeking to be through having (Shankar & Fitchett 2002).

The common thread in all the findings that fall into the categories above is that the role of the consumer in achieving the sought after marketing result is at least as important as that of the marketer. All these functions cannot be but co-produced by "marketing with" not "marketing to" as Badot & Cova (2008) enunciated.

We propose that consumption is not only a process of value cocreation but, in most cases, holds aspirations of partaking or sharing higher order values. On the basis of this logic, we hereby suggest that it is possible to summarily replace all the possible variants of "needs and wants" with value cocreation. By removing the navel-gazing "wants" from the marketing agenda we hope to rid marketing of the conceptions of consumption as inherently amoral and of people as dust in the wind of motives and as aggregates of traits; two of the most potent alibis for allowing markets to develop into heartless, soulless and mindless structures isolated from the local societies that feed them as well as from history and the world at large.

The dominant marketing paradigm of the 20th century, which has repeatedly been proved insufficient to explain consumer behavior (Vargo & Lusch 2004, 2008b; Vargo & Morgan 2005), seeks value in the exchange. In G-D logic, wants and desires are but problematic states with an indeterminate number for possible solutions (a notion originally touched upon in Arndt 1978). Holbrook (1987: 128), in setting the basis for defining consumer research as the study of "the

process of consummation (including its possible breakdowns)", pointed out that goal achievement, need fulfillment or want satisfaction are experienced as "value." This notion was expanded upon in the work of Zeithaml et al. (1993) which culminated in the introduction of the value-percept theory according to which needs, wants and desires are but dimensions of "value" by which the marketable "object" is compared to experience through a cognitive-evaluative process in order to produce an emotional response (Parker & Mathews 2001; Spreng & Olshavsky 1993). Thus, all consumer behavior can be conceptualized as value-seeking behavior. This view provides an all-encompassing approach to the system of value cocreation and includes the supply (Vargo & Lusch 2004) as well as the consumption based social network (Schau, Muñiz & Arnould 2009).

The service dominant (S-D) logic draws on Aristotle's (1959) distinction between "exchange-value" (the quantity of a substance that could be commensurable to the value of all things) and "use-value" (a collection of specific and overarching qualities), the latter being a construct that mainstream economics does not account for. It is the qualities related to use-value that can account for the different ways in which different people relate to the same object (Vargo et al. 2008) thus, partaking of the value cocreation process.

We would like to take the S-D logic one step further by suggesting that value cocreation is a meta-process (with meta denoting Diotima's (Πλάτων (Plato), 1912) μεταξύ (in between) rather than the commonly meant 'after'). The producer–object–(marketing)–consumer chain has another, deeper, dimension of value cocreation, where the relationship between the owner/user and the object fundamentally changes not only the person seeking "the opportunity to construct, maintain and communicate identity and social meanings" (Elliott 1997: 285) by participating in elaborate consumer identity projects (reviewed in Arnould & Thompson 2005), but also gives the object a personality far subtler and more enduring than the most elaborate of brand iconicity structures (Holt 2004) the most proficient of marketers could ever dream of. This is described in *Zen and the Art of Motorcycle Maintenance* (Pirsig 1974: 52).

> A friend who owns a cycle of the same make, model and even same year brought it over for repair, and when I test rode it afterward it was hard to believe it had come from the same factory years ago. You could see that long ago it had settled into its own kind of feel and ride and sound, completely different from mine. No worse, but different.
>
> I suppose you could call that a personality. Each machine has its own, unique personality which probably could be defined as the intuitive sum total of everything you know and feel about it. This personality constantly changes, usually for the worse, but sometimes surprisingly for the better, and it is this personality that is the real object of motorcycle maintenance. The new ones start out as good-looking strangers and, depending on how they are treated, degenerate rapidly into bad-acting grouches or even cripples, or else turn into healthy, good-natured, long-lasting friends. This one, despite the murderous treatment it got at the hands of those alleged mechanics, seems to have recovered and has been requiring fewer and fewer repairs as time goes on.

The possibility that this meta-process also involves marketing has already been documented (Schau et al. 2009), so it remains to be seen how it changes the producer and the marketing environment.

A reconceptualization of marketing: societing

The concept of value takes into account not only the immediate participants to a fleeting exchange or a sequence of repeated exchanges, but the network of relationships around the

object. It also acknowledges, through the fundamental question "value to whom?," the externalities of the purchase, use and disposal of the object which were acknowledged as needing to be systematically addressed as "a normal, indeed inevitable" part of both production and consumption a long time ago (Ayres & Kneese 1969: 282), but have yet to find their way into mainstream marketing, where consumers' moral concerns are swept under the "green/eco marketing" and Corporate Social Responsibility (CSR) carpet (Shaw, Grehan, Shiu, Hassan & Thomson 2005; Young, Hwang, McDonald & Oates 2010).

This approach also refocuses our attention away from a conceptualization of people as totally egocentric individuals whose understanding of their existence can be summarized in a paraphrase of René Descartes' 1637 dictum as "*emo ergo sum*," which leads to "having" a lifestyle (cf. W.T Anderson & Golden 1984; Maycroft 2004) enmeshed in the ticking off of one after another iconic consumable from a list that can be expanded *ad infinitum* by the new variants of beloved products or the latest innovation. Instead, we propose that we seek to understand (not to predict or direct the behavior of people) the value that we can create within communities and with people that live their lives in pursuit of happiness.

Such an approach repositions marketing as a *social* science which means that its purpose is to serve society through value creation. This is not to say that the business of business is some abstract form of "social responsibility." In the contemporary economic system, marketing is not some kind of invisible hand, but the output of the labor of skilled individuals who have a responsibility to serve the objectives of their employers, generally corresponding to generating profits, "while conforming to the basic rules of the society, both those embodied in law and those embodied in ethical custom" (Friedman 1970). In the ideal world of Milton Friedman (Friedman 1970, 1982), the basis of participation to cooperation through free enterprise is value, the value obtained from voluntary cooperation with no coercion, deception or fraud and on the basis of the shared values and responsibilities of individuals who voluntarily form various groups that comprise society.

It is not important to our conceptualization how we managed to bring ourselves so far away from this ideal, or any other ideal for that matter. What is important is that the self-centeredness of the bipolar market structure of consumers possessed by "needs and desires" on the one hand and "profit maximization" seeking amoral producers on the other has been shown to be totally dysfunctional in its lack of harmony and balance. The focus on value and the concern for values, we hereby propose, returns the discourse back to where it started a couple of millennia ago:

1. to the repositioning of economics, and its anthropocentric offshoot, marketing, within the wider frame of axiology (from the Greek word αξία, meaning value), the study of ethics and aesthetics (Schroeder 2012);
2. to the refocusing on the consumer not as an aggregate of a "higgledy-piggledy collection of … attributes" (Bauman 2011: 87) but as an individual seeking not only to assert "the belief that the self is a wonderful human being" (Dunning 2007: 247) through his or her choices and behaviors, of which consumption is but one, but also striving to be a good person;
3. to the pursuit of "being happy" rather than "having (products that you are made to believe will give you) happiness" (Shankar & Fitchett 2002, discussing Erich Fromm's thesis on having and being).

This perspective is consistent with the findings of the in-depth study of brand communities by Schau et al. (2009) that demonstrated that value is manifest in networks, where willing operant resources are creatively utilized through prolonged vibrant and dynamic collaborative

engagement that allows participants to freely modify products rather than firm–consumer dyads. The whole point of marketing, then, is to grow, not exploit, and to also learn from cocreative partners, rather than strive to control the thought processes and feelings of hapless customers. As consumers are actually organized in society – of which markets are but one function and not a component – the sphere of activity for the discipline that is generally known as marketing is the whole of society instead of just the abstract "market" and thus, the discipline is more appropriately re-termed as "societing" (Badot & Cova 2008).

Even though there have been numerous admonitions for an outside-in approach the practice of an inside-out approach to the marketing concept has prevailed (de Chernatony et al. 2009), but if marketing was ever a product and determinant of its environment, societing is by definition entrenched in the social conditions. At the time of writing, its function is facing unprecedented challenges as a result of the economic crisis that has been plaguing Western capitalist societies. These challenges importantly impact on a variety of issues pertaining to value and the effect of consumers as moral agents on the discipline's function (Carrigan & De Pelsmacker 2009).

The metamodern world in crisis

Although historical analyses of marketing have shown that "the early articulations of the marketing concept were underwritten by an explicit ethical orientation that placed limits on corporate behavior" (Tadajewski & Jones 2011), the dominant perspective of the 20th century has been that it is a "may already be" (Firat & Venkatesh 1993), or a "has always been" (van Raaij 1993) postmodern institution; a human practice embedded in cultural forms (Firat & Dholakia 2006), but also transforming cultures on a global scale (Firat & Venkatesh 1993), through asserting that "consumers' needs and desires are and should be the reigning criterion" (Firat & Dholakia 2006: 127), irrespective of costs to themselves and to others, in pursuit of rampant egoism.

A lot has been written (Firat & Venkatesh 1993) on how marketing is promoting and feeding on hyperreality, supporting and being celebrated in fragmentation and the decentering of the subject and even more on its tolerance of and responsibility for creating more and more of those paradoxical juxtapositions of postmodernity. A prime example of the ensuing "culture of the simulacrum" (Jameson 1990) is Spin Media™, formerly known as Buzz Media™, the self-described as advertising and "influencer marketing & talent relations 'agency'" that prides itself on "DEFINING CULTURE. ADDICTING AUDIENCES" and in particular their product branded as "Go Fug Yourself" which "boldly covers Hollywood's fashion crimes – and delivers justice upon the guilty" and "a tournament (*sic*) featuring celebrities who have made the worst fashion faux pas in the previous year" (buzz-media 2012a).

It is way beyond the scope of this discussion to pinpoint the exact point in time when the marketing discipline agenda changed from "seeing to it that men and women come into the possession of … functional and vital" goods that "foster dignity and self-respect … at the right time consistent with their actual as well as potential earning power and capacities" (Hess 1935: 23) to turning a young woman into a famous-for-being-famous "American socialite, television personality, businesswoman, fashion designer, model, author and actress" (Kim Kardashian 2012) and a "sophisticated marketing engine … one of the post-2000's most enduring brands" (Petersen 2011) that not only sells "a very sketchy credit card targeted to teens" (ibid.) but is also paid 50 cents per 1,000 followers for a tweet© (Petersen 2010) meant to divert an estimated 40,000 out of her 5 million followers from eagerly watching her take care of her mom who had "a little 'nip-tuck'" (buzz-media 2012b) to visiting a fashion brand website (Petersen 2010, 2011).

Disjointedness has reached a point where exchange value "has been generalized to the point at which the very memory of use value has been effaced" (Jameson 1990: 18) by bestowing

enough "Mystery, Sensuality and Intimacy" (Saatchi & Saatchi 2012a) on toilet tissue (Saatchi & Saatchi 2012b) to "inspire: Loyalty Beyond Reason" (Saatchi & Saatchi 2012a) and make the Labrador puppy-assisted roll "reach your heart as well as your mind, creating an intimate, emotional connection that you just can't live without. Ever."

Ever? Twenty years ago, van Raaij (1993: 558) argued that in the postmodern world "value is no longer a property of the product, but a property of the image … and the image is the reason of (*sic*) the consumer to buy and to use the product." Yet it was Baudrillard, the high priest of postmodernity (D. B. Clarke 2009) himself, who tracked the full cycle of the historical path of all images: from a reflection of basic reality, to masking and perverting basic reality, to masking the absence of reality, to finally bearing no relation to any reality whatsoever, thus, becoming its own pure simulacrum (Baudrillard 1983).

One comes to wonder, how much value do consumers still place on the simulacrum well into an already four-year-long global recession which is expected to deepen in 2013 (Kaiser & Wroughton 2012) and last for another five to seven years (Napach 2012)?

The marketing environment is changing fast. On a political-legal level the crisis has brought extreme liberalism to a swamp made of greed, lobbies, uncontrollable finance markets, investment pyramids, lack of transparency in the making and applying of rules and controls and seemingly resulting in the beginning of a socialist capitalism whereby the profits go to companies and their shareholders and losses to the state and taxpayers, thus, squeezing incomes and increasing tax burdens. The Western political system seems to feel its own fall of the wall; its own 1989 (Πανηγυράκης (Panigyrakis) 2008). On the economic level the repercussions are manifold. The global power map is changing dramatically through groupings into PIIGS and BRICS and new "economic locomotives" such as Mexico, lenders, borrowers and potential defaulters. Entrepreneurship seems to suffer in the credit crunch, employment structures are collapsing and people seem to be hankering for a return to what we were lamenting about three years ago: the "€700 youth" in Greece (Γιάνναρου (Yiannarou), 2007), the "generazione mille euro" (Incorvaia & Rimassa 2006) in Italy and the "precarious generation" (Buchen & Agnew 2007) in France. After the "adieu to job security" (ibid.) it seems that the time is coming to bid adieu to employment and face the reappearance of the specter of stagflation (Πανηγυράκης (Panigyrakis) 2008). Officially, 25.913 million men and women in the EU-27 were unemployed in October 2012. For the precious GenY'ers the figures are dramatic as the unemployment rate is over 20 percent whilst in Greece and Spain almost 60 percent of the 18–34 year olds are out of work (EUROSTAT 2012). On the social level, further to the obvious quantitative repercussions of the crisis, it is the qualitative terms that matter the most to marketing: erosion of the social fabric, disruption of personal and family life caused by the new "eight hour working day" (9a.m.–9p.m.), discontent over disregard for values and sub-standard public services, individual sense of loneliness, hopelessness and isolation, particularly for young people and the elderly (Πανηγυράκης (Panigyrakis) 2008).

It seems improbable that, within the current context, consumption can continue to be about intimate, emotional connection with icons. It looks as if people are reconsidering the meaning of "you just can't live without" to mean getting maximum value out of the essentials for survival. In everyday, practical terms, this tendency seems to be reflected on the supermarket shelves. Sales of private label products have been increasing by 40 percent annually over the past decade and in 2010 they accounted for 100 percent of the supermarket channel growth in the U.S. despite huge promotional efforts and discounts of their branded equivalents (Private Label Sales Soar 2011) whilst in crisis stricken Greece, where they were unheard of ten years ago, they have grown to a market share of about 20 percent (Μανέττας (Manettas) 2012). Most importantly, 8 out of 10 U.S. consumers polled said not only that

they consistently shop for store brands but also that they find them to be either equal to or better than national brands (Private Label Sales Soar 2011) whilst manufacturers of mega-brands have said that "we need to respond to consumers by providing better quality and cheaper products if we are to retain their loyalty" (Μανέττας (Manettas) 2012).

The crisis hits the stuff of dreams as hard as it hits the autotelic repeat purchases. One of the most celebrated, and best documented of twenty-first-century identity construction consumption simulacra is the car or motorbike (cf. Galbraith 1998; McAlexander, Schouten & Koenig 2002; Schembri 2009), a particularly pertinent accessory to manhood as well as the main vehicle of social recognition for Greeks. Yet, in 2011 the number of people de-registering their, often brand new and luxury, vehicles rose by 114 percent compared to 2010 and the expectation that the figures would double by the end of 2012 (Angel 2012) was confirmed as over 110,000 people gave up vehicles they could no longer afford in a two-week period (at 60 percent road tax payments, 2012). This is not a particularity of a county in dire circumstances. In the U.S., where the large car and SUV are firmly entrenched in culture and daily life, sales dropped in 2012 by 87.5 and 10.1 per cent respectively compared to 2011 (Market Data Center 2012).

The list of examples is potentially as long as the list of product categories in contemporary markets. The point is that anecdotal evidence as well as market data seem to concur that image is no more the issue, at least not as much as value. Moreover, it is questionable if there will be many more "treatises [describing] the dominance of consumption motives among Americans" and severe doubts are cast on the sustainability of the pre-eminence of material self-interest (Richins & Dawson 1992: 303), when nearly 50 million people and 20 percent of all children in the U.S. live below the poverty line (Census: U.S. Poverty Rate Spikes, Nearly 50 Million Americans Affected, 2012), a condition shared by 80 percent of the world population who live on less than U.S.$10 per day (Statistic Brain 2012). It is hereby argued that turn-of-the-20th-century studies focusing on material values and demonstrating that people relate to their possessions as tokens of success, central to their lives and seen as paths to happiness and satisfaction with life (Richins 2004; Richins & Dawson 1992) were but a product of their times; times that have changed.

Finally, the notion that all consumption experience is producing strong emotions and unforgettable and extraordinary experiences has already been challenged and linked to a call "for a critical reflection … of the role that [marketing] could have in the maintenance or destruction of our living environment" (Carù & Cova 2003: 281). Consumers seem to demand exactly that (Carrigan & De Pelsmacker 2009; N. Clarke, Barnett, Cloke & Malpass 2007; de Ferran & Grunert 2007; Fan 2005; Hustvedt & Bernard 2010; Jägel et al. 2012; Klein, Smith & John 2004; Robert V. Kozinets & Handelman 1998; Krystallis & Chryssohoidis 2005; Micheletti & Follesdal, 2007; Piff, Kraus, Stephane, Cheng & Keltner 2010; Shaw et al. 2005; Strong 1996; Uusitalo & Oksanen 2004; Webster 1975; Young et al. 2010) in a variety of positive as well as aggressive ways, thus, casting doubt on the assertion (van Raaij 1993: 562) that "hedonic and momentary and … thus, often superficial and ego-centered consumption" really adds meaning to life.

From the purposeful amoralism of consumerism to axiological societing

The image has run its full circle. Consumers appear to be becoming increasingly hostile to marketing, as marketing professionals disregard the societal effects of their actions (Sheth & Sisodia 2005) in a way similar to that observed in the general milieu of advanced industrial democracies' political (Dalton & Wattenberg 2002) and class systems. Close to a century ago, Hess (1935) called for marketing to create "wholesome demand," but this was obviously not heeded as Manrai & Manrai (2007) had to echo the call for the replacement of a "popular marketing mix," with a "rightful marketing mix." Their conceptualization, Socially-Responsible

Marketing (SRM), includes morally just marketing alongside socially responsible and ecologically friendly marketing but, as they concede, it is far from common practice in the marketing and businesses community (ibid.) as empirical research results consistently fail to link its various forms, such as corporate citizenship, to measurable financial outcomes (Kusku & Zarkada-Fraser 2004; Maignan & Ferrell 2000). What marketing practice fails to do, consumers attain through their choices and changed behaviors discussed above, thus creating the conditions for the re-definition of marketing as "the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large" (American Marketing Association Board of Directors 2007).

All organisms naturally consume 24 hours a day, 7 days a week in order to survive, but, as Emmanuel Levinas taught us, human beings are possessed by a moral impulse to feel responsible for other human beings upon sighting them (Bauman 2010). This "primordial phenomenon of gentleness" (Levinas 1980: 150), which he called the "responsibility for the Other" and made a key issue in his philosophy, the "wisdom of love," as opposed to replacing the commonly used literal translation of *philosophy* as love of wisdom (ibid.). To alleviate the meaninglessness of an amoral in its total subjectivity, individual needs-serving existence of a born-to-consume human being swamped by brands and marketing messages, van Raaij (1993) pins all hope on the "return of the 'lost father' of ideology or religion" whereas Levinas sees subjectivity as primordially ethical and an outcome of our meeting with the Other which gives us meaning, direction and orientation (ibid.).

After re-examining the course of the marketing discipline in terms of its subphenomena (consumer experiences and sensory systems), its phenomena (marketing networks), and its superphenomena (sustainability and development) Achrol & Kotler (2012: 51) call for bravery on the part of marketers and consumers alike in the hope that the "millennial shift" will see marketing liberate itself from the engineering of its function to becoming a biological and social science and finish their analysis "with this sentiment: one meaning of 'millennium' is a hoped-for period of joy, serenity, prosperity, and justice." Murphy, Laczniak & Wood (2007) proposed virtue ethics as the framework for the development of relationship marketing with an emphasis on the sequence of Trust→Commitment→Diligence, a call echoed also by the practitioner community, where the future of brands is forecast to lie *inter alia* in accountability, trust and assuming responsibility for their social influences (Gunelius 2012).

It goes without saying that, in the context of societing, there is no distinction between consumer and producer, customer and marketer as business executives and investors are also consumers and all of them are citizens of the same, one global village. A customer centered marketing is a logical impossibility in the light of lay-offs and salary cuts for profit maximization.

All this can be summarized into each person assuming full responsibility for other people, which entails voluntarily curtailing one's rampantly egotistical desires and making axiological judgments that result in commonly accepted hierarchies of values. In ancient Greek philosophy "a moderate attitude towards pleasures (in the ordinary sense) will spare one both the frustration of unfulfilled desire and the consequences of over-indulgence" (Rowe 1997: 126–127).

Materialism is usually an outward manifestation of insecurity which can be alleviated by enhancing self-esteem starting from the healthy social development in children (Burroughs et al. 2013) to achieve functional autonomy (Maslow 1970). This brings the issue of virtue and the emphasis on the decision maker to the forefront, as it is the strong, healthy, functionally autonomous individual (that is an adult, whose needs for safety, belongingness and love have been gratified in childhood, so that fundamental aspects of her character function independently of the very gratifications that created them) who can find the fortitude of character required to be a responsible moral agent who can partake of societing.

A concluding note and reality check

Through a dialogue of economics with theology (Mofid 2005), the roots of dehumanized economics are pinpointed as desire and fear which, however, need not be thought of as permanent features of the human condition, as many religious traditions have taught us that they are based on ignorance, a misconception of reality, and so they can be removed by the true understanding of reality. Amartya Sen (1988) defines economic development in terms of the free supply of basic necessities such as education and health care and explains that planning for economic development is futile without ethics and respect for values such as freedom and dignity. Can one claim that this is the case in contemporary societies? Philosophical issues seem to be more and more distant from current entrepreneurial practices. However, the current crisis could be seen as a unique opportunity both for consumers to reassess their consuming habits and for multinationals to reconsider the effects of their practices. Now, more than ever, economics are seen as capable of as well as responsible for peace, to which business can contribute by fostering economic development through nourishing a sense of community and citizenship (Fort & Schipani 2007). Marketing can act as a cornerstone in this new paradigm, promoting and fostering these ideals.

Indeed, alternative forms of economic organization and value systems have produced peaceful societies in the history of humankind. There are many peaceful societies, a significant proportion of which are based on matriarchal structures (Howell & Willis 1989), which are characterized by avoiding violence, and most importantly by thinking and feeling that they must avoid it.

For a more concrete idea, the following example of a practical application of axiological societing is offered below. It is our belief that technological advances have now made it possible to look at alternative models of social organization, as the impact of time and space on our collective experience is greatly diminished by the onset of technologies such as the web 2.0 and beyond (Baker 2012; Goo 2012).

The G/wi of the Central Kalahari Game Reserve of Botswana, a contemporary people who live in autonomous hunter and gatherer bands of 40 to 80 men, women and children each in their own territories, over which they have full control of the resources contained, are a prime example of a "peaceful society" (G/wi 2012). They have solved the needs/wants conundrum by "using a small inventory of material culture and a large corpus of knowledge" (Silberbauer 1997: 19). Based on the belief that the world and all resources in it belong to the creator, property is legitimate only as far as people have made things themselves or they have collected or hunted with the proviso that this is no more than what they need. There is no room left for wants and "false" desires as material wealth, or power gained by controlling resources, are so frowned upon that they are as good as forbidden. It is actually impossible to accumulate material possessions as the exchange value of any good or service is determined by the recipient's need for it, discounted by the donor's ability to give, thus, removing the motive for exploiting differential advantage (ibid.).

In the 1990s the Botswanan government forced the G/wi to move from the desert as their presence was considered a threat to diamond mining and their hunting practices were deemed inconsistent with tourism development. Their possessions were confiscated and their water supply was cut off, but after protracted legal battles they were allowed in 2011 to drill for water at their own expense and as of March 2012 they are gradually returning to their lands after years in urban resettlement communities (Bonta 2012). Thus, the G/wi culture has survived for thousands of years and made it to the twenty-first century intact, despite being forced to live in "modern" conditions for 20 years.

As they are returning to their lands, the G/wi are reverting to the economic system of their forefathers. This peaceful society, people who effectively foster interpersonal harmony and who rarely permit violence or warfare to interfere with their lives (Fry 1999; Sponsel 1996), has proved

resilient to the forcible assimilation to urban life in a capitalist economic system as well as to their exposure to a prolific inventory of material culture. Thus, the G/wi are demonstrating that greed is not one of the "natural propensities" of the human condition and that the profit motive is *the* "false" desire. So what could one learn from such a mentality in today's materialistic society?

This real-life example illustrates what Nikolay Gavrilovich Chernyshevsky, the 19th-century Russian revolutionary democrat, materialist philosopher, critic, and utopian socialist, pointed out (Scanlan 1967): that the desire to increase one's material wealth is only a result of social custom, a routine, that brings no noticeable difference in pleasure. Further and foremost, the case of the G/wi demonstrates that axiological societing is not an idealized notion, but a viable alternative to amoralism. Society and consumers have moved forward, from the passive consumption of dreams and fantasies to the active pursuit of happiness. It remains to be seen whether the marketing discipline itself will walk by their side in this new path, or lead its own, inevitably solitary, course.

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3

Restoring justice

An examination in the marketing context

Anna S. Mattila

"Let justice be done, though the heavens fall"
A Roman proverb by Lucious Culpurnious Piso Caesoninus

Abstract

Justice is a universal concept that touches all areas of life, including commercial exchanges. Humans, unlike other species, have a sense of morality (Cropanzano et al., 2011). Justice is typically defined as a moral property of some event or action (e.g., Bagger et al., 2006). Simply put, something is fair when a person believes it to be fair. In other words, perceived fairness lies in the eyes of the beholder and consequently the same event can be perceived as fair or unfair depending on the individual. In this chapter we use the terms fairness and justice interchangeably. The goal of the present chapter is to review marketing and consumer behavior literature related to justice and to provide some avenues for future research.

The chapter is organized as follows: first we discuss the dimensions of the fairness construct. We then discuss fairness in the context of service recovery efforts. Third, we discuss the social impact of justice in terms of relationship norms and third-party justice. We then explore different pricing strategies and their impact on perceived fairness. We end with a discussion on the role of culture in shaping consumers' fairness perceptions.

Key words

Justice, fairness, service recovery.

Dimensions of fairness

Justice has been a highly popular topic in organizational psychology over the past four decades. Some research supports a two-factor model in which distributive and procedural justice are considered as independent facets of fairness (Greenberg, 1990; Lind & Tyler, 1988), whereas other work suggests that a third dimension – interactional justice – is needed to better understand how people form justice perceptions (Bies & Shapiro, 1987; Aquino, 1995). The three-

dimensional view of justice has also been successfully applied to the marketing context. For example, customers evaluate perceptions of fairness with the service recovery and complaining behavior by three factors: outcomes, procedural fairness and interactional treatment (Goodwin & Ross, 1992; Tax et al., 1998; Smith et al., 1999). Distributive justice refers to the perceived outcome whereas procedural fairness involves the policies and rules by which recovery effort decisions are made (Smith et al., 1999). Interactional fairness focuses on the interactional treatment during the process. Interactional justice can be further separated into two dimensions: interpersonal treatment and informational justice (Colquitt, 2001; Colquitt et al., 2001; Scott et al., 2007). Informational justice taps into the perceived adequacy and truthfulness of information explaining the causes for unfavorable outcomes (Colquitt, 2001). Taken together, the four fairness dimensions are assumed to explain a large percentage of variation in post-recovery satisfaction; yet their relative importance might depend on the type of service involved (Smith et al., 1999; Mattila & Cranage, 2005; Mattila, 2001).

A recent meta-analysis by Gelbrich and Roschk (2011) suggests that the impact of distributive justice might be limited to transaction-specific satisfaction, while interactional justice might be a more salient driver of cumulative satisfaction. Surprisingly, their results indicate that the impact of distributive justice as the driver of service recovery is limited to transaction-specific satisfaction. Cumulative satisfaction, on the other hand, seems to depend on interactional justice. Moreover, their findings suggest that the relationship between fairness and satisfaction is contingent on several factors, including target group, industry, and complaint type. Despite the large body of work examining the dimensional structure of justice, there is recent research in social psychology suggesting a shift from the dimensional view to an overall justice (Ambrose & Schminke, 2009). In that spirit, Han et al. (2008) show that service fairness and commercial friendships are the key determinants of customer loyalty.

Going forward in understanding the facets of fairness, researchers might want to examine new moderators such as status and power and their impact on distributive and procedural justice (Blader & Chen, 2012). Another interesting individual level moderator might be regulatory focus. Prior research shows that promotion-focused individuals might be more likely to retaliate against unfair treatment than their more prevention-focused counterparts (Brebels et al., 2008). Or, if loyalty status or group membership reflects the consumer's level of inclusion in social groups, then such factors might influence how consumers react to procedural justice (van Prooijen et al., 2004).

Service recovery efforts

There is ample research examining how an organization's service recovery efforts affect customers' justice evaluations and, in turn, their satisfaction and loyalty behaviors (e.g., Homburg & Furst, 2005; Homburg et al., 2010).

Typically, customers expect to be compensated for the inconvenience caused by the service failure (Tax et al., 1998; Smith et al., 1999). Compensation is the most researched topic in complaint handling (Davidow, 2003) and tangible compensation for service recovery (e.g. free upgrades) has been shown to influence consumers' perceptions of distributive justice (Mattila & Patterson, 2004b; Smith et al., 1999). As a result, many service organizations offer various combinations of refunds, credit, discounts and apologies to make peace with dissatisfied customers. The speed with which service failures are remedied is one of the major drivers of procedural justice (Blodgett et al., 1997; Tax et al., 1998). Moreover, courtesy, empathy (Tax et al., 1998) and politeness, concern and neutrality (Sparks & McColl-Kennedy, 1998, 2001) have been shown to influence customers' overall perceptions of justice. The notion of apology is

somewhat controversial, as some studies view it as part of distributive justice (e.g. Collier & Bienstock, 2006; Davidow, 2003; McColl-Kennedy & Sparks, 2003) while others link apology to interactional justice (e.g. Goodwin & Ross, 1992; Mattila & Patterson, 2004b; Smith et al., 1999). Despite a growing interest in interactional treatment in explaining consumers' reactions to dissatisfying incidents, research examining the role of explanations in mitigating the negative effects of service failures is relatively scant. The lack of interest in this area is surprising because attribution theory suggests that people tend to seek causal explanations for an event that is either surprising and/or negative (Folkes, 1988; Weiner, 1986). The findings of Mattila's (2006) study imply that customer-contact employees might be able to influence post-recovery impressions by offering a causal explanation for a service failure. But as McColl-Kennedy and Sparks (2003) suggest, front-line employees need to be trained in the art of providing explanations. Explanations need to be both sincere and adequate in clarifying the causes for poor performance (e.g. Folger & Cropanzano, 1998).

Research bridging organizational theories with service recovery highlights the importance of employee actions on the justice–satisfaction link. For example, Maxham & Netemeyer (2003) demonstrate that employees' extra-role behaviors influence customers' perceptions of justice, satisfaction, word of mouth, and purchase intent. In a similar vein, Liao (2007) shows that while employee behaviors such as making an apology, problem solving, being courteous, and prompt complaint handling enhance customer satisfaction and repurchase intent, these effects are mediated by fairness perceptions.

The results from Orsingher et al.'s (2010) meta-analysis indicate that satisfaction with complaint handling is mainly affected by distributive justice, followed by interactional justice, and only weakly by procedural justice. The results from another meta-analysis by Gelbrich and Roschk (2011) support the following paths: "organizational responses (compensation, favorable employee behavior, and organizational procedures) → justice perceptions (distributive, interactional, and procedural justice) → post-complaint satisfaction (transaction-specific and cumulative satisfaction) → customer behavioral intentions (loyalty and positive word of mouth [WOM])." Both meta-analyses provide strong evidence for the notion that justice mediates the impact of organizational responses on customer satisfaction.

Given the rapid increase in on-line and self-service technology (SST) encounters, there is a pressing need to understand how consumers react to technology-based failures (Meuter et al., 2003; Shapiro & Nieman-Gonder, 2006). Yet research on service recovery with technology-related failures is scarce (for notable exceptions see Holloway and Beatty, 2003; Harris et al., 2006b; Mattila et al., 2011). Previous work suggests that effective service recovery is hard, in particular with technology-related failures (Meuter et al., 2000). Generic recoveries (e.g. automatic e-mail reply), lengthy delays, poor customer support, poor communication and feelings of injustice are common problems with technology-based recovery efforts (Holloway & Beatty, 2003). Thus, service organizations need to find solutions to improve their on-line complaint handling systems. Moreover, companies need to pay attention to the click-of-the-mouse phenomenon as unfair treatment induces consumers to go viral (e.g., Ward & Ostrom, 2006).

The impact of relationship types

Typically, customer satisfaction is influenced by the individual's prior experiences with the service provider. There is some evidence to suggest that emotional bonding or relationship status might make customers more lenient towards service providers in the case of service failures (e.g. Mattila, 2004). On the other hand, researchers also argue that perceived losses arising from service failures are highly detrimental among customers with high prior cumulative satisfaction

(Bitner et al., 1990; Bolton, 1998). Loyal customers might retaliate if they feel betrayed by a service failure (Grégoire & Fisher, 2008). Conversely, customers with low levels of emotional bonding might be highly "forgiving" as long as the service recovery is effectively handled (Mattila, 2004).

Relationship status is indeed a concept that is closely related to fairness. For example, Aggarwal and Larrick (2012) introduce the notion of communal versus exchange relationships to the recovery literature. Communal and exchange relationships were first identified in the interpersonal relationships literature (Clark, 1981; Clark & Mills, 1979; Clark, Mills & Corcoran, 1989) but have also been applied to consumer contexts (Aggarwal, 2004; Goodwin, 1996; Johnson & Grimm, 2010; Wan et al., 2011). In communal relationships, members benefit from each other on the basis of needs or to demonstrate general concern for each other's welfare (Clark, 1984). Conversely, in exchange relationships, members benefit from each other in response to specific benefits received in the past or expected in the future (Clark & Mills, 1979; Mills & Clark, 1982). Aggarwal & Larrick (2012) show that consumers who have a communal relationship with a brand are more sensitive to interactional fairness under conditions of low distributive fairness while those who have an exchange relationship are more receptive when distributive fairness is high.

Building on the notion of communal versus exchange relationships, it would be interesting to see if customers in a communal relationship are more open to charitable contributions as a part of the service recovery effort. Corporate social responsibility (CSR) can be defined as a company's commitment to minimizing or eliminating any harmful effects and maximizing its long-run beneficial impact on society (Mohr, Webb & Harris, 2001, p. 46). Companies have become increasingly interested in CSR as it seems to have a positive impact on consumers' affective and behavioral responses (Barone, Miyazaki & Taylor, 2000; Brown & Dacin, 1997; Ellen, Webb & Mohr, 2006; Sen & Bhattacharya, 2001). Moreover, CSR has been linked to increased market value of the company (Luo & Bhattacharya, 2006; 2009) and better financial performance (Luo & Bhattacharya, 2006; McGuire et al., 1988; Stanwick & Stanwick, 1998). It would be interesting to see if CSR could mitigate the harmful effects of service failures and hence enhance consumers' post-recovery fairness perceptions.

Third-party justice

Service failures are common and oftentimes such failures are witnessed by other customers, particularly in public settings such as retail stores, restaurants and hotels. Although there is ample research in the service recovery literature examining the effect of a service failure on the focal customer and their reactions to the situation (e.g., Smith et al., 1999; DeWitt et al., 2008; Brady et al., 2008; Grewal et al., 2008; Mattila & Patterson, 2004a, b) very little is known about how customers react to service failures that happen to other customers.

Given that it is generally assumed that all people in similar circumstances deserve equal treatment (Leventhal, 1980), the observation of another customer being treated unfairly should result in low fairness perceptions. Spencer and Rupp (2009) refer to perceptions of how fairly others are treated as third-party justice perceptions, and reactions to such perceptions as third-party justice effects. However, research examining *why* people react negatively to third-party injustice is scant. The interpersonal or relational model of justice suggests that people value fairness because the level of fair treatment informs them as to their social standing in the groups of which they are a member (Lind & Tyler, 1988; Tyler & Lind, 1992). Moreover, a series of studies by Turillo et al. (2002) demonstrate that when given the chance, people attempt to restore justice even when they stand to gain nothing by doing so and in situations where they

have no relationship with the wronged party. As an explanation for these results, Turillo et al. (2002) suggest that the subjects were motivated by deontological principles. The deontic perspective of fairness theory (Cropanzano et al., 2003; Folger & Cropanzano, 2001) postulates that people react to perceived wrongdoing not because of their own self-interest but due to an inherited predisposition to be sensitized to unfair treatments.

Prior research has examined third-party justice effects by manipulating the level of personal involvement with the third party and whether the source of information was direct or indirect (van den Bos & Lind, 2001). Yet, the condition of no personal involvement combined with indirect information has not yet been studied in the social justice literature. This, however, is a condition that occurs frequently in a retail or service setting. Often, the focal customer receives information by observing a service failure and recovery effort occurring to an unfamiliar customer. To that end, it would be interesting to examine consumers' reactions to service failures and recovery efforts aimed at a third party.

Emotions

To better understand consumers' reaction to service failures, recent research has examined the impact of emotions on service recovery efforts (e.g., Chebat & Slusarczyk, 2005; McColl-Kennedy & Sparks, 2003; Schoefer & Ennew, 2005; Smith & Bolton, 2002). Relying on Affect Control Theory as a theoretical framework, Chebat and Slusarczyk (2005) examine how positive and negative emotions mediate the effects of justice on loyalty. Their findings indicate that interactional justice is powerful in inducing both types of emotions. Distributive justice, on the other hand, influenced loyalty via symmetrical mediating effects of negative and positive emotions. Finally, procedural justice had asymmetric effects on emotions and behavior. In a later study by Rio-Lanza et al. (2009), procedural justice was the only fairness dimension linked to emotions. Other studies have also demonstrated the mediating role of emotions in the justice–loyalty/satisfaction link (e.g., DeWitt et al., 2008; Rio-Lanza et al., 2009; Schoefer & Diamantopoulos, 2008).

Since anger is the dominant affective reaction following a service failure, it is not surprising that studies have focused on this discrete emotion. For example, Kalamas et al. (2008) show that anger has a negative impact on customer satisfaction and justice perceptions. McColl-Kennedy et al. (2011) further demonstrate that the three dimensions of justice have a differential impact depending on whether the customer targets their anger at the front-line employee or at the organization as a whole.

However, prior research has failed to consider both the impact of incidental mood and specific emotions in influencing consumers' fairness judgments. This omission is unfortunate as prior research in organizational justice shows that mood states in addition to discrete emotions influence people's fairness judgments (Mullen, 2007; van den Bos & Lind, 2002; Sinclair & Mark, 1991; 1992). Yet, the literature in organizational justice has failed to consider the three constructs – mood, emotions and justice – in a single study (Cropanzano et al., 2011). Future research should examine the joint effects of incidental affect (mood) and integral affect (elicited by marketing stimuli) on consumers' fairness perceptions in the context of service or product failures.

Price fairness

Xia, Monroe and Cox (2004) integrate the theoretical foundations of fairness perceptions and provide a summary of empirical findings on price fairness. Bechwati et al. (2009) propose three broad antecedents to perceptions of price unfairness. Consumers perceive price unfairness when

(1) they feel that the firm is making excessive profits, (2) they are not able to understand the pricing structure applied, and (3) they sense the firm is acting in an immoral or unethical manner.

To address some of these conditions, Bolton and her colleagues examined the role of the firm's cost structure on consumers' fairness perceptions. Based on the notion of dual entitlement principle, they argue that the price increases are likely to be perceived as fairer if they are cost-justified. Consumers appear sensitive to several reference points such as past prices, competitor prices, and cost of goods sold. Nevertheless, they tend to underestimate the impact of inflation, over attribute price differences to profit, and fail to take into account the full array of vendor costs (Bolton, Warlop & Alba, 2003). Bolton and Alba (2006) further show that that perceived fairness of the price increase is contingent on the alignability of the cost and price increases. In other words, alignable increases are considered as more acceptable than nonalignable increases.

Dynamic pricing practices have become popular with the increased penetration of the Internet. However, recent studies suggest that such pricing practices might have a negative impact on consumers' fairness perceptions (Haws & Bearden, 2006). Consumers seem to have learned to accept dynamic pricing in certain contexts such as the hotel and the airline industry, but their reactions vary based on their familiarity with dynamic pricing. Wirtz and Kimes (2007), for example, show that framing and fencing had strong effects on perceived fairness when respondents were less familiar with dynamic pricing practice. Conversely, when familiarity was high, neither the framing nor fencing had a significant impact on fairness.

Even if consumers accept the notion of dynamic pricing in certain conditions, differential pricing at an individual level might lead to perceptions of unfairness. Charging different prices for an identical product based on the individual customer's demographic profile might backfire as consumers are fast in revealing price information on the Web. For example, the verdict is still out for Orbitz.com's decision to list different hotels in different price categories depending on whether the consumer is a PC or a Mac user. Do social comparisons made available via technology make fairness an even bigger issue in today's hypercompetitive marketplace?

Culture

The concept of justice is likely to be universal across cultures, but its manifestations might differ based on cultural differences (Pillai et al., 2001; Greenberg, 2001). People in collectivist societies tend to emphasize relationship harmony, put high value on face and avoid conflicts (e.g., Morris & Leung, 2000). Conversely, subjective well-being is the main driver in individualistic cultures, including the U.S. (Brockener et al., 2000). Given these fundamental differences in core values of the society, it is not surprising that people's perceptions of fairness are culturally dependent (e.g., Leung, 1997; Hui & Au, 2001). Prior research in organizational justice suggests that Western people tend to prefer the equity rule whereas Asian cultures put the emphasis on group harmony or equal treatment (Kim et al., 1998; Steiner & Gilliland, 2001; Miles & Greenberg, 1993).

In the context of service recovery, culture has been shown to play a major role in consumers' reactions to service recovery strategies. For example, Patterson *et al.* (2006) show that Power Distance, Uncertainty Avoidance, and Collectivism, interact with consumers' fairness perceptions. Similarly, individualism, masculinity (Kanousi, 2005), and long-term Orientation (Kanousi, 2005; Poon et al., 2004) are linked to service recovery expectations. Comparing three countries – Australia, the U.S., and Singapore – Wong (2004) found that compensation has a universal positive impact on the customer's post-recovery perceptions while apology was more effective among the Singaporean and Australian samples. Mattila and Patterson (2004a) show that the "causal explanation" for service failure as a part of service recovery effort reduced internal attributions for U.S. customers whereas "explanation" had a minimal influence on East Asians.

Furthermore, compensation seems to drive customers' fairness perceptions with American consumers. Finally, Schoefer (2009) shows that individuals' cultural value orientations influence the impact of both cognitive (i.e., perceived justice-based) and affective (i.e., emotion-based) antecedents to recovery satisfaction.

In terms of pricing, Bolton et al. (2010) show that collectivist consumers are more sensitive to in-group versus out-group differences in pricing than individualist consumers. This is due to the fact that collectivist consumers tend to be concerned about "face" (i.e., status earned in a social network) that arises from in-group comparisons.

Future research might want to examine the impact of retailing policies in influencing consumers' perceptions of complaint handling and service recovery practices. It can be argued that returning policies and service recovery efforts vary widely across the continents. Hence, is it really the culture that influences consumers' fairness perceptions or are their reactions driven by the norms in their respective societies? In addition, the notion of power at the individual level warrants future inquiry. Do the powerful in highly collectivist societies require truly special treatment in order to feel happy with a recovery process or is it the individualistic mindset that makes powerful people even more demanding?

Conclusions

This chapter offers a starting point for broadening our thinking on justice in the context of marketing. An integrative framework that includes both cognition and affect is needed to further our understanding of the complexities associated in people's fairness perceptions in various marketing related contexts, including service encounters, service failures, complaint handling and pricing to mention a few. There is also an urgent need to understand how technology has changed people's fairness perceptions, in particular among the young generations. Systematic empirical research is needed to tease out different facets of justice and their impact on important outcome variables such as customer satisfaction, loyalty and actual purchase behavior. We hope that this chapter will spark some interest among marketing scholars.

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4

Process-based marketing management

Tarek Mady, Ajay Manrai and Lalita Manrai

Abstract

Academics and professionals have continuously stressed the need for better interactions between marketing and the various business functions. However, most have argued that in order to truly impact firm performance, such relationships must go beyond short-term cross-functional teams typically formed within organizations to conduct a specific task or achieve a one-time common goal. Indeed, the evidence suggests that both function-specific and organization-wide goals are better achieved if marketing takes a lead role in the various business processes central to an organization's activities. What is needed is a more permanent relationship and enduring philosophy that would allow for the absorption of marketing thoughts such as "customer first" into the everyday planning and strategic goals of the various functions within an organization. That is, firms need to develop and foster an environment and organizational structure based on integrated marketing-based decision making or Process-Based Marketing Management (PBM2).

The chapter highlights the progression of management and marketing thought advocating for better interfaces between marketing and other business functions within organizations. Perspectives and paradigms supporting the notion of bringing marketing to the forefront of organizational processes are discussed and particular reference is given to the implications for function-specific and organization-wide performance. This includes a discussion of market orientation and the role of interdepartmental dynamics in the achievement of organizational goals. It is followed by a discussion of the literature focusing on the degrees of interface across functions and the corresponding systems and structures prevalent in today's organizations. The third section of the chapter is devoted to the relevant literature focusing on the interface of marketing with Sales, R&D, Operations/Production, Finance/Accounting, and Human Resources. Emphasis is given to the challenges and attempts to improve interfunctional dynamics. The chapter concludes with a discussion of various tools facilitating and improving organizational integration including ERP systems, process-based matrix structures, and outsourcing.

Key words

Process-based marketing management, interfunctional interface, business processes, market orientation, organizational structures, organizational integration tools, enterprise resource planning, outsourcing.

Process-Based Marketing Management (PBM2)

Introduction

Calls for increased interaction and collaboration between marketing and the various business functions have been extensive and continue to grow louder (Kahn & Mentzer, 1998). Many scholars and practitioners alike call for better interface between marketing and R&D (Griffin & Hauser, 1996; Fisher, et al., 1997; Gupta, et al., 1986), logistics (Ellinger, et al., 2000; Murphy & Poist, 1992), manufacturing/operations (Kahn & Mentzer, 1998; Parente, 1998; St. John & Hall, 1999), sales (Malshe & Sohl, 2009; Hughes, et al., 2012; Rouzies, et al., 2005), human resources, HR (Harris & Ogbonna, 2001), and finance (Hayman & Mathur, 2005; Zinkhan & Zinkhan, 1997; Lovett & MacDonald, 2005). This is not unexpected since ample evidence suggests that improved inter-functional dynamics are positively linked to enhanced firm performance (Lascu, et al., 2006; Narver & Slater, 1990).

What is interesting is that many of these calls (within both marketing and non-marketing literature) often also advocate that marketing take a lead role as improved inter-functional interfaces are developed within organizations. After all, if the fundamental purpose of any firm is to serve (and profit from) its customers, then all its distinct functions should be linked to the entity responsible for cultivating relationships with these customers, namely marketing.

However, most researchers have argued that in order to truly impact firm performance, such linkages must go beyond short term inter-functional teams typically formed to conduct a specific task or achieve a one-time common goal. What is required is a more enduring philosophy which promotes cooperation amongst the various functions within an organization (Zinkhan & Zinkhan, 1997) and would result in the absorption of marketing and marketing thoughts such as "customer first" into the everyday planning and strategic goals of the various non-marketing functions within an organization. That is, firms need to develop and foster an environment based on integrated marketing-based decision making (i.e. Process-Based Marketing Management, PBM2).

The purpose of this chapter is to highlight the state-of-the-art perspectives regarding marketing as a central pillar to and with other business areas as well as the cross-functional nature and inherent benefits of utilizing marketing within these functions. Evidence and paradigms originating in both marketing and non-marketing literature will be reviewed and assessed. Emphasis will be given to function-specific and organization-wide performance implications.

The chapter is structured into four main sections. The chapter will begin with a discussion of market orientation followed by a discussion of the different perspectives of interface outlined in the literature. The third section of the chapter is devoted to discussions of the relevant marketing and non-marketing literature focusing on the various interfaces with marketing. Subsections focus on the interfaces of Marketing with Sales, R&D, Marketing Operations/Production, Finance/Accounting, and Human Resources. The final section of the chapter includes discussion of various techniques and tools facilitating and improving interface across organizational functions.

Market orientation

There is no universally accepted definition for "process-based marketing management" (PBM2). Indeed, previous and current marketing literature rarely uses such a term at all. However, PBM2 can be considered to be an organization-wide philosophy and structure where the concept of "satisfying consumer needs" permeates all aspects of business processes and decision making is based on strong and positive inter-functional dynamics. However, this idea that customer needs should be at the heart of all business planning processes is certainly not a contemporary one and has been clearly documented in the marketing concept/market orientation literature.

The origins of modern marketing can be attributed to the earlier work of the father of modern management, Peter Drucker. Remarkably, the fact that Drucker did not consider himself to be a marketer made him all the more credible in highlighting the important role of marketing in any organization (Uslay, et al., 2009). Marketing, according to Drucker, is "a central dimension of the entire business. It is the whole business seen from the point of view of its final result, that is, from the customer's point of view. Concern and responsibility for marketing must, therefore, permeate all aspects of the enterprise" (1954, p. 63). That is, marketing is more akin to an overall managerial philosophy than a specialized functional activity.

Drucker would later argue that while the goal of most organizations is to create profit, the ultimate purpose of any business should be "to create a highly satisfied customer" (1973, p. 61). Therefore, profit is only a means to an end and the true measure of success is the effectiveness and efficiency in creating the output. But since the output is typically evaluated by the customer, the organization should be geared towards the customer. Only if the consumer finds value in the output will the business prosper. It is these assertions by Drucker that brought about the modern marketing era and the emergence of the so-called marketing concept as a tenet of contemporary management and organizational strategy (Day, 1994; Faulkner, 2007).

The marketing concept emphasizes "knowing the customer" or "satisfying customer needs and wants" and it is often defined as "the idea that an organization should strive to satisfy the needs of consumers while also trying to achieve the organization's goals" (Kerin, et al., 2011, p. 14). On the other hand, market *orientation* has been defined as a set of shared values and beliefs about putting the customer first in business planning (Despande & Webster, 1987). However, while intuitively appealing, these definitions provided few insights into *how* firms can incorporate such thoughts into actual business processes (Houston, 1986). It is easier said than done to aim the entire organization towards satisfying customers.

Somewhat echoing the vague nature of marketing jargon persistent in the late 1980s, Shapiro (1988) asked a simple but thought-provoking question – What the hell is "market orientation"? In his seminal work, Shapiro put forth for discussion "how exactly does a firm implement the so-called marketing concept?" Shapiro noted that in order for a firm to truly implement the marketing concept and reach a state of "market orientation," firms must embrace three complementary processes:

- Information on all important buying influences permeates every corporate function;
- Strategic and tactical decisions are made inter-functionally and inter-divisionally;
- Divisions and functions make well coordinated decisions and execute them with a sense of commitment.

While Shapiro did not offer empirical data, his work is significant because it provided one of the earliest illustrations of the role of marketing as a pillar of organizational strategy and that the positive implications of increasing such a role are contingent on a firm's ability to create systems

that advocate and require inter-functional relationships in terms of information sharing and shared decision making. Market-oriented firms create value and achieve competitive advantages through inter-functional synergy (Goold & Campbell, 1998).

In defining market orientation, the first and probably most rigorous effort was Kohli & Jaworski (1990), who defined market orientation as, "the organization wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organization wide responsiveness to it" (p.6). This definition echoes the assertion by Levitt (1969) that an organization's path forward should be the result of the marketing department's ability to communicate with and educate other functions and that a marketer's most important role may lie in "selling" the marketing concept within the firm. While main conceptualizations of market orientation have followed (e.g., Narver & Slater, 1990; Despande, et al., 1993; Slater & Narver, 1995), Kohli and Jaworski's interpretation remains one of the most widely accepted.

However, Kohli and Jaworski's greatest contribution may be in their ability to identify the various elements that enable (or discourage) a market orientation mindset. As illustrated in Figure 4.1, Kohli & Jaworski (1990) assert that the three main antecedents are top management support, interdepartmental dynamics, and the overall organizational system pervasive in the firm. They go on to note that implementation of market orientation results in positive consequences in terms of customer responses, business performance, and employee responses. These assertions were later empirically verified by Jaworski and Kohli (1993) as part of their work on the MARKOR scale designed to operationalize market orientation.

Of particular interest for this chapter is the role of interdepartmental dynamics. Kohli and Jaworski (1990) noted that formal and informal communication across departments play a critical role in the implementation of market orientation. As shown in Figure 4.2, they note that

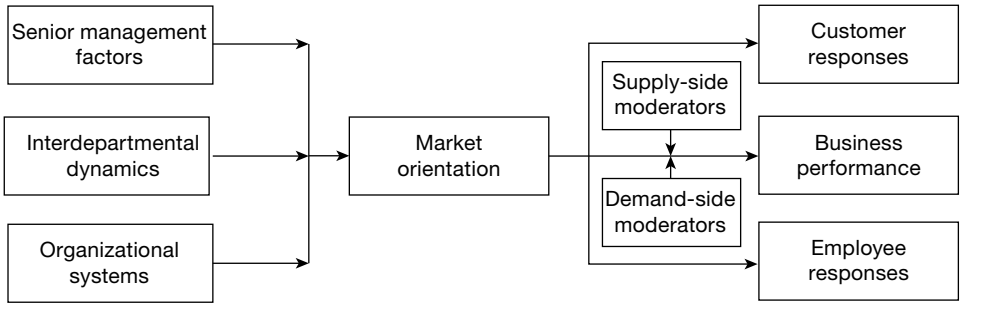

Figure 4.1 Antecedents to and consequences of a market orientation (Adopted from Kohli and Jaworski 1990)

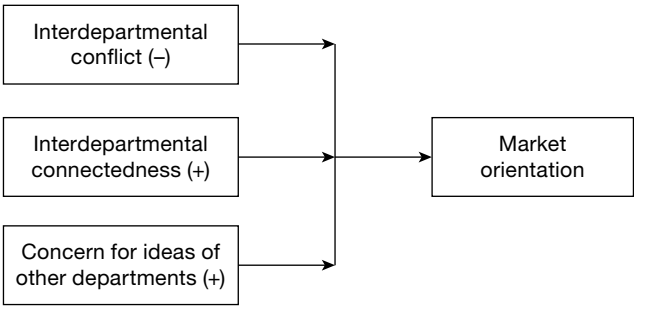

Figure 4.2 Interdepartmental dynamics and market orientation (Adopted from Kohli and Jaworski 1990)

such dynamics are made up of three interrelated factors: interdepartmental conflict, interdepartmental connectedness, and a general concern for the ideas of other departments. Interdepartmental conflict (a main inhibitor for communication across departments) typically arises as a result of the natural desire of specific departments to become more powerful or more important (Levitt, 1969). Both connectedness (informal or formal contact among employees across departments) and concern for ideas of other departments (interest in suggestions and proposals of other groups) tend to have a positive relationship with the ability to implement a market orientation.

Since then, a tremendous amount of marketing literature has suggested that positive inter-functional dynamics are critical to the development of market-oriented organizations and are essential to achieving marketing and organizational objectives (Slater & Narver, 1995; Matz & Kohli, 2000; Slater & Narver, 1994). However, a detailed assessment of the literature suggests vagueness in the forms by which such dynamics can take shape (Kahn, 2009; Olson, et al., 1995). This is mainly due to the fact that business processes in organizations are often contextual and the degree of inter-functional cooperation needed is often based on the nature of the process itself.

Interface structures

The business process

A business process is "a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer" (Hammer & Champy, 1993, p. 35). Similarly, a business process has been defined as "a structured, measured set of activities designed to produce a specific output for a particular customer or market" (Davenport, 1993, p. 5). More recently, Palmberg (2009) defined a process as "a horizontal sequence of activities that transform an input (need) to an output (result) to meet the needs of a customer or stakeholder" (p. 207). What is interesting about these definitions is that, regardless of the actual process in question (billing, order fulfillment, inventory management, customer relationship management, vendor evaluation, etc.), the output of such a process should be of *value* to a customer. This implies that business processes should be conducted (and are successful) if and only if customer needs are met. Therefore, successful implementation of a market orientation is a must for the successful achievement of process goals. If as Drucker (1954) argued, the marketing philosophy should be an integral and organic part of the organization, it would be only natural for the marketing function to be central to all business processes within an organization, regardless of the "origins" of such processes from a functional perspective. However, today's organization are often not structured with this is mind.

Differentiation vs. integration

Organizations have traditionally been structured based on Adam Smith's idea of specialization of labor (Vanhaverbeke & Torremans, 1999). This classical perspective asserts that a business process should be fragmented and simplified in order to achieve the economies (scale or scope) associated with concentration on simple tasks. Accordingly, most organizations develop functional departments that are viewed to being proficient in specific skills (e.g., sales, customer relations, R&D, financial reporting, etc.) (Kahn & Mentzer, 1998). "Management," in turn, is viewed as the administrative unit responsible for coordinating these different functional entities and ultimately achieving organizational goals. Consequently, it is not uncommon for managers to view the organization as a varied group of business functions managed by heads of individual

departments and ultimately bound by an often rigid hierarchy (Balzarova, et al., 2004). One main result of this perspective has been the emergence of (and overreliance on) the organizational chart as a fundamental instrument for organizational design and structure. These charts presumably allow for better identification of formal reporting relationships, grouping of individuals into departments, and ensuring more effective coordination across departments (Child, 1984) through well-defined vertical lines of communication.

Overwhelming evidence from these so-called hierarchical (functional) structures indicates that these organizations tend to encompass distinct departments that are often self-focused and prioritize their own internal goals first and exhibit much less regard for overall organizational objectives or processes (Balzarova, et al., 2004). The end result of this state of *differentiation* is the pervasiveness of a "silo" mindset within departments (Zinkhan & Zinkhan, 1997) and an introspective mentality, which often suppresses transfer of information and knowledge sharing across departments (Castka, et al., 2001) and ultimately leads to an inability to react to the business environment.

Business processes are inherently horizontal in nature and require various interfaces across department. As such, processes routinely de-emphasize the functional structure of an organization (Vanhaverbeke & Torremans, 1999). For example, the order-fulfillment process requires coordination across many organizational functions including sales, marketing, finance, logistics, and operations. Under a hierarchical structure, individuals within a particular function would only communicate via higher-level managers, which would mean the "customer-first" mindset would be realized only at that level while functional employees will remain driven by internal goals, which can often conflict with the greater objectives of the organization. However, the question remains – How much interface is needed between the various functions?

Degrees of interface

While most of the literature notes the importance of open and productive relationships across functional departments in order to achieve organizational objectives, subtle differences and nuances regarding the nature of these needed cross-over efforts have often gone unnoticed in the literature (Kahn, 2009). For example, organizational theory research often emphasizes and advocates for "synergy" or "integration" when defining cross-over efforts needed to achieve organizational objectives. Synergy, a term often noted in resource-based theory, refers to combined or "cooperative" efforts (Hughes, et al., 2012) while organizational synergy is "an open, integrated process that fosters collaboration and encourages participation to expand connections beyond typical boundaries to achieve innovative outcomes" (Salmons & Wilson, 2008, p. 34). In other words, synergy implies functioning together to produce an outcome not independently obtainable. High integration is often defined as the process of achieving unity in effort among subsystems in an organization in accomplishing key organizational goals (Lawrence & Lorsch, 1967).

Effective organizations are those that can achieve a balance between differentiation and integration of functions (Lawrence & Lorsch, 1986). Both are needed. However, the degree to which each state is emphasized is often a function of the levels of uncertainty inherent in the organization's environment (Kahn, 2009). Situations with higher levels of uncertainty require more extensive modes of integration (in the form of coordinated problem-solving and information-sharing processes among individuals with unique knowledge sets), whereas situations with low levels of uncertainty do not require as much integration. Kahn (2009) argued differentiation (functional) initiatives and integration (cross-functional) initiatives were actually on a continuum with "multifunctional" initiatives representing a middle ground.

Functional initiatives represent those activities where an individual function or department has minimal or very little contact with personnel from other functions. They typically include activities which are narrow in scope and pertain to function-specific goals. These collaborative efforts emphasize formalized lines of authority and standard operating procedures. As such, these are often referred to as *bureaucratic/hierarchical* directives since communication tends to flow vertically and coordination is tasked to a high-level manager (Galbraith & Nathanson, 1978; Mintzberg, 1979). Examples of functional initiatives could include HR personnel processing monthly salary paperwork, a customer service representative addressing a simple customer inquiry, a salesperson generating leads, a procurement manager restocking office supplies, or an accountant recording expenses. The routine nature and simplicity of such activities creates a situation where input from other functions might actually hinder efficiency and effectiveness (Kahn, 2009).

Multifunctional initiatives are those where personnel serve a liaison role to an often short-term initiative. The goal of the liaison is to represent the function's views. It often takes one of two forms: *individual liaisons* or *temporary task forces*. Individual liaisons are often tasked with communicating with their counterparts in other departments, thus supplementing the vertical communication flows typical of hierarchical directives (Olson, et al., 1995) with some horizontal communication. Temporary task forces go further and allow for individual liaisons to interact repetitively and informally within the context of a particular project or initiative. While temporary task forces allow for more integration across functions, higher-level managers still retain authority to govern task force directives. Moreover, there is often little vested interest in the initiative since responsibilities and rewards (and allegiance) still originate from the respective department. Nonetheless, multifunctional teams are a popular team choice for integrating departments (Griffin & Hauser, 1996). Examples could include HR-based new employee orientation and training, production/operations aggregate planning processes, financial budgeting, and customer relationship management.

Cross-functional initiatives include representatives from different departments/functions with a preselected team leader from a department responsible for team management. Participants in cross-functional initiatives are tasked with ensuring that the initiatives' goals are achieved and given rewards and compensation tied to the outcome of the cross-functional initiative. Cross-functional initiatives often take the form of *integrating managers* or *matrix structures*. An integrating manager initiative usually involves imposing an additional management position on the existing functional structure. The manager is assigned the position and the main responsibility is to coordinate the efforts of various functional departments (e.g., a new product manager, assistant brand manager, etc.). However, the integrating manager often lacks the formal authority to impose decisions on departments and thus the manager must rely on persuasion and the ability to encourage group decision making (Olson, et al., 1995).

On the other hand, matrix organizational configurations create dual authority structures where individuals are responsible to their functional managers and the cross-functional initiative. Since matrix structures tend to maximize both vertical and horizontal communication flows, participants become more dedicated to the initiative. Conflicts between functions remain and there are still possibilities for role conflict (Galbraith & Quelle, 2009), but these structures are often viewed as truly strategic and organization-wide (Olson, et al., 1995) because they allow companies to leverage vast resources while staying relatively task (process)-oriented (Sy & D'Annuzio, 2005). In fact, successful process management often leads to a matrix structure (Kung & Hagen, 2007; Hertz, et al., 2001) since the entire organization is viewed in terms of the relationships between the interdependent elements and its ability to create value through business processes (Senge, 1990; Porter, 1985). Adopting this process view of business strategy implies that an organization does what is necessary to produce value for the customer (Davenport, 1993).

While the matrix structure first emerged in the aerospace industry during the 1960s to allow for top management monitoring as well as government oversight of project-based systems (Knight, 1977), evidence suggests its proliferation in a variety of industries including automotive, banking, chemical, communications, defense, electronics, financial, and energy (Galbraith, 2002). High performers like Proctor & Gamble, IBM, Cisco, and Schlumberger have implemented matrix structures in order to adapt to their increasingly complex business environments (Galbraith & Quelle, 2009). In these successful companies, debates are typically resolved and joint goals are established collaboratively. By focusing on the benefits of collaborating over control mechanism, these companies have strong leadership teams and have been able to create a one-company culture (ibid.).

Many management philosophies and cultures have been proposed to unify organizational operations via cross-functional and matrix initiatives including total quality management (TQM), integrated marketing communications (IMC), and the learning organization (Zinkhan & Zinkhan, 1997). Given the positive track record of these initiatives and structures, it is not surprising that most of the work in marketing literature (especially literature focused on market orientation) appears to favor and advocate for cross-functional initiatives (Kahn, 2009), even if only implicitly. Table 4.1 provides an illustration of the interfunctional continuum.

Table 4.1 A continuum of interfunctional interface

	Differentiation ← → *Integration*				
Coordinating initiative (Kahn, 2009)	Functional initiatives	Multifunctional initiatives		Cross-functional initiatives	
Structural form (Galbraith & Nathanson, 1978; Mintzberg, 1979)	Bureaucratic structures	Individual liaisons	Temporary task forces	Integrating managers	Matrix structures
Dimension/Process					
Degree of environmental uncertainty	Low	← →			High
Structural complexity	Simple	← →			Complex
Decision making	Hierarchical	← →			Participative; Democratic
Conflict resolution	Hierarchical	← →			Participative; Consensual
Informational flow	Vertical; formal; impersonal; Infrequent	← →			Horizontal; informal; face-to-face; frequent
Work flow; Job scheduling	Sequential	← →			Concurrent
Evaluation and rewards	Based primarily on functional outcomes	← →			Based primarily on project or unit outcomes
Motivational focus	Functional	← →			Customer/Project

Source: Adapted from Olsen et al. (1995)

Interface between marketing and business functions

Implementing a process-based structure within an organization is often easier said than done. When cross-functional interfaces are initiated, the issue of accountability and who should be in charge of a particular process is often the key area of conflict. Since the fundamental purpose of any firm is to satisfy customer needs, marketers will often argue that the marketing function should take the leading role in the development of organizational strategy and managing business processes. While this argument is expected and often supported by the literature, Slater and Narver (1994) warned that in order to truly establish a market orientation and thus have marketing thought permeate all aspects of an organization's processes, it is important to ensure that cultural change is embraced and driven by senior management, and not simply a marketing focus that gives marketing activities (and marketers) an unnecessary significance within the organization. More often than not, imbalance in the power of the relationships between functional areas often result in inter-functional conflict (Massey & Dawes, 2007) and thus reduction in team work, increasing distrust, and eventual withdrawal from the relationship (Song, et al., 2000). The end result is that organizational objectives are not met.

The degree of conflict (and means to reduce it) is based on the nature of the relationship and the particular process requiring skillsets inherent to marketing and those based in the other functional area. The following section provides a discussion of the key insights from marketing and non-marketing literature focusing on the interface between marketing and various business functions.

Marketing and sales

The traditional conviction in the literature is that personal selling is an integral part of the promotion function, which is an integral part of marketing. However, despite the complementary nature of marketing and sales, most organizations separate the two functions into distinct departments, each with its own tasks and responsibilities (Workman, et al., 1998). Yet, the importance of an effective sales and marketing interface to improving business performance cannot be overstated. In fact, since the sales and marketing interface has a direct and significant impact on consumers it is often viewed as being of greater significance to improving business performance than many other internal interfaces (Dawes & Massey, 2005). Kotler et al. (2006) assert, "Every company can and should improve the relationship between Sales and Marketing" (p. 78). Marketing relies on salespeople to deliver the marketing message externally and collect valuable customer information (Colletti & Chonko, 1997). On the other hand, sales functions are frequently dependent on marketing activities to provide a consistent supply of prospective customers through their promotional activities (Meunier-FitzHugh & Piercy, 2001).

The interface between marketing and sales has been extensively addressed in the literature (Hughes, et al., 2012; Homburg, et al., 2008). Still, while sales and marketing have traditionally been seen as part of a complementary process of identifying, developing, and retaining consumers, evidence suggests that they do not always act collaboratively to the greater benefit of the firm (Meunier-FitzHugh & Piercy, 2001). Many factors have been found to contribute to the lack of collaboration including differing internal cultures (Beverland, et al., 2006), goal differences (Homburg, et al., 2008), and the nature of communication across the two functions (Dawes & Massey, 2005). As outlined in Table 4.2, many of these factors seem to stem from a fundamental difference in mindsets across the two functions.

An underlying factor contributing to the differences seem to be the nature of the interface itself and the dissatisfaction resulting from the need to interact in the first place (Homburg &

Table 4.2 Mindset differences between sales and marketing

Dimension	*Sales*	*Marketing*
Primary responsibilities and focus	Customer	Product and/or brand
Nature of activities	Personal relations, people-oriented	Aggregations, analysis
Pace of activities	Continuous daily activities	Time-based and sporadic projects
Work environment	High stress from customer demands	Less stress and typically removed
Feedback and success measures	Quick (results-based) feedback, numbers and sales	Slower (abstract results) feedback, process based
Overall orientations	Short-term (incentive-based) results and orientation	Long-term (competitive advantage) results and orientation

Source: Adapted from Rouzies et al. (2005)

Jensen, 2007). For example, despite the inherent similarities between marketing and sales functions, especially with regards to serving customers, the two rarely cooperate in marketing strategy creation (Biemans & Brencic, 2007). The core of the relationship between the marketing and sales function in most organizations is one of planning vs. implementation (Kotler, et al., 2006). Strategies are created by marketing with very little input from sales. Sales personnel are introduced to these strategies only after they have been approved. Consequently, many salespeople feel these strategies are inappropriate, ineffective, irrelevant, or simply disconnected from the realities of the market (Strahle, et al., 1996). The result is that very few marketing strategies are actually supported by the sales function.

According to Malshe and Sohi (2009), the strategy making process across the marketing–sales interface entails three main stages: Groundwork, Transfer, and Follow up. Groundwork involves a conversation between the two functions regarding the current status of the firm's products and services. In this stage, the primary objective is to get both parties to achieve a common perspective about the firm's environment. As such, it is important that communication is open, bidirectional, and designed to provide feedback to one another. In the transfer stage, marketers must explain to the sales organization the particulars of the strategy and explicitly detail its rationale and nuances. A critical aspect of the phase includes allowing sales personnel to come up with tactical plans so the strategies can actually be implemented in the field. The idea is to transfer the "philosophy" into ground "reality" (Malshe & Sohl, 2009). When this is accomplished, closure must be achieved to allow for a renewed focus on the key issues, priorities, and activities needed to implement the strategy in the field. Finally, follow-up must be conducted after strategies are "rolled out." This involves both functions checking in with one another so as to maintain consistency between the plan and its implementation. This is a critical but often overlooked phase of the strategy creation process since marketing is often relegated to an observer position at this point. Figure 4.3 illustrates the three phases and activities of the marketing strategy making process across the interface.

An improved marketing–sales interface is positively associated with overall firm performance (Meunier-FitzHugh & Piercy, 2001; Biemans & Brencic, 2007; Hughes, et al., 2012). However, coordinating between marketing and sales can also improve the effectiveness of activities undertaken by the functional areas themselves (Rouzies, et al., 2005). As illustrated in Figure 4.4,

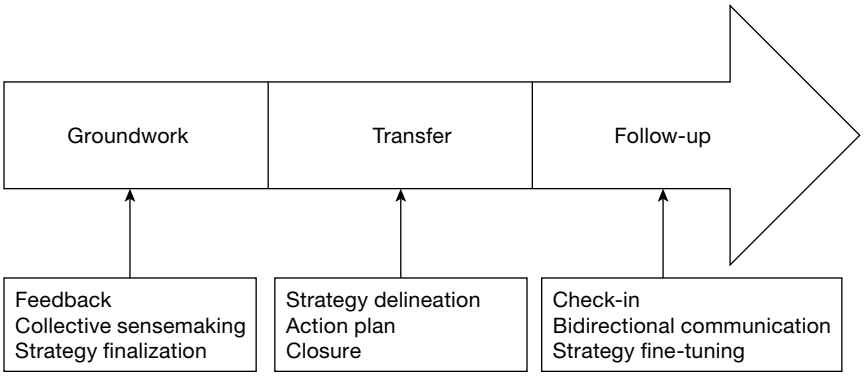

Figure 4.3 Strategy making process across the sales–marketing interface (adopted from Malshe and Sohi 2009)

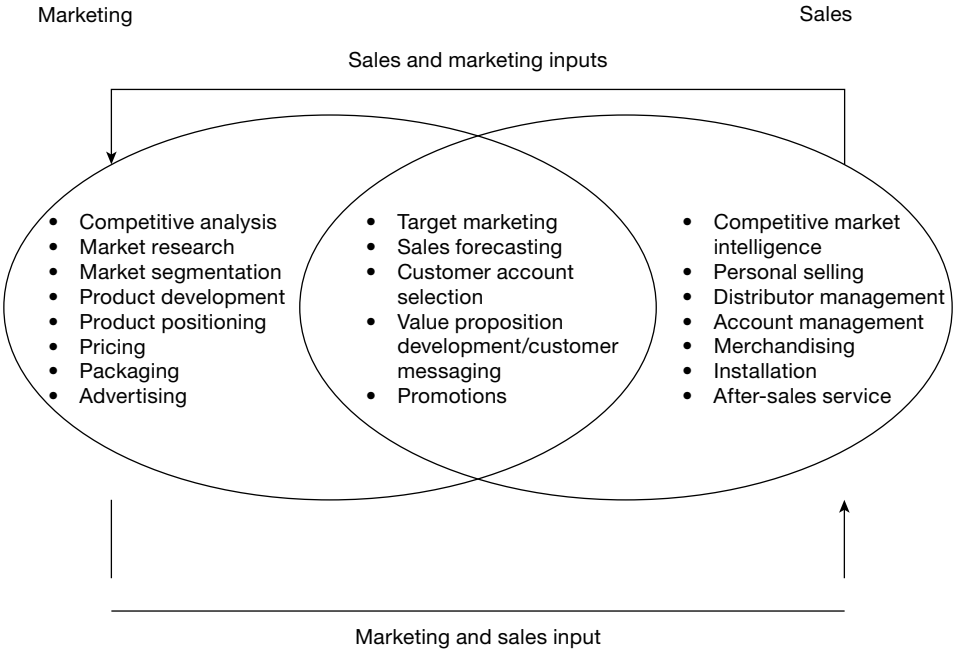

Figure 4.4 Examples of sales and marketing task integration (adopted from Rouzies, et al. 2005)

sales and marketing conduct certain activities individually with the help of input from the other functions. Effective implementation of the activities at the intersection can only occur if there is a coordinated effort between marketing and sales (ibid.).

Marketing and R&D

The interface between marketing and R&D has typically been discussed within the context of the new product development process (NPD) (Atuahene-Gima & Evangelista, 2000). Significant implications result from successful application of the NPD project including portfolio management, medium to long-term cash flows, and even the long-term survival of the firm

itself (Cooper, 1996). While the strategic importance of NPD is often related to proficiency in all organizational functions (Ettlie, 1997), the success of NPD has often been attributed to a firm's ability to determine and understand customer needs (marketing) and by translating this understanding into technical specifications and the development of innovative offerings that meet those needs (R&D) (Serkan & Cetin, 2007).

Yet, while it has been implicitly assumed in the marketing literature that marketing should have a significant role in product development (Workman, 1993), evidence suggests that marketing's role and the level of interface between marketing and R&D is often limited (Ernst, et al., 2010; Workman, 1993; Massey & Kyriazis, 2007; Atuahene-Gima & Evangelista, 2000; Shaw & Shaw, 1998).

In one of the earliest studies focusing on the R&D–marketing interface within the context of NPD, Gupta et al. (1986) argued that an innovation's success is a function of the degree of integration between the two functions and developed a model for studying the interface between the two functions. They argued that the success of the innovation is a function of a gap between the perceived need for integration and the actual integration achieved between marketing and R&D (see Figure 4.5). Gupta et al. (1986) argued that the degree of integration required was a function of the firm's own new product strategy and the perceived uncertainty in the environment. The more bullish a firm is with regards to entering new markets/products and the greater the uncertainty in the environment, the higher the degree of integration needed. However, the amount of integration achieved is often less than the degree achieved, resulting in an integration gap. Organizational factors such as structure, reward systems, and top management support for the marketing–R&D interface are critical determinants of the ability to integrate. Sociocultural differences across the marketing and R&D functions also impact the ability to integrate. These include differences in professional and time orientations, types of products preferred, and tolerance for ambiguity.

As illustrated in Table 4.3, the typical NPD process consists of three main stages: concept development, product development, and implementation (Ernst, et al., 2010). The concept development stage typically involves the generation and assessment of new ideas. It also involves further refinement of the promising ideas into new product concepts before the development stage. In this stage, the marketing–R&D interface is important since marketing must provide information regarding whether or not new product ideas are in line with customer needs (ibid.).

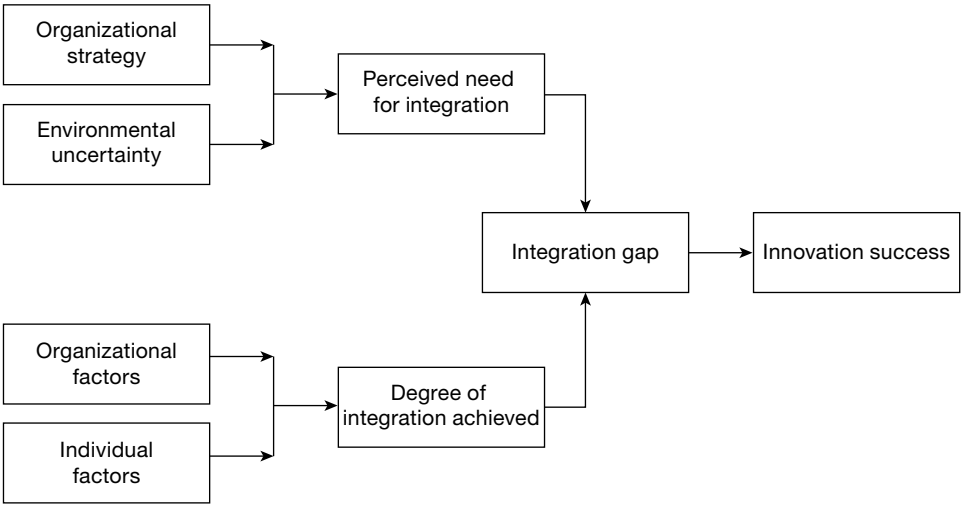

Figure 4.5 The marketing–R&D interface (adopted from Gupta et al. 1986)

Table 4.3 Main stages in the typical NPD process and primary tasks

NPD Phase	*Primary tasks*
1. Concept development and strategy and development	• Identify market opportunities • Identify corporate resources needed • Develop preliminary financials
2. Planning and development design	• Create functional specifications • Create business plans for manufacturing-operations, service, marketing, sales
3. Implementation and design	• Prototype development, lab or field testing • Commercialization

Source: Adopted from Workman (1993)

In the development phase, various plans must be developed and require critical information from both functions. Also, marketing's primary role is in assisting R&D in translating abstract consumer needs into actual functional specifications consumers will value. The implementation phase typically involves activities such as market launch, product training, after-sales support, and monitoring competitors' reactions. Marketing's role is one of monitoring market reaction and becoming the link between R&D and consumers.

Marketing and operations/production

The marketing and operations/production interface has been extensively discussed in the literature (Swami, et al., 2006). Pressures from increased competition, new technologies, and demanding customers seeking high-quality, low-cost products have made cooperation between the two functions a necessity in today's business environment (Gunasekaran, et al., 2002). When the two functions are in conflict, organizations often experience mismatches in demand and supply, which lead to production inefficiencies and unsatisfied customers. However, when in sync, organizations tend to experience improved competitiveness in the form of response to customer needs and innovativeness, delivery, and shipping time (Ho & Zheng, 2004).

Marketing and production/operations are intimately connected in many firms since marketing is often viewed as the creation of customer demand while operations management is the supply and fulfillment of that demand (Ho & Tang, 2004). Therefore, marketers need to understand the factory can be relevant in terms of meeting customer due dates, product customization, and new product innovation (Aquilano & Chase, 1991).

Operations are usually back end processes as these are not normally visible from the demand side chain, that is, the customer's side. However, arguments can be made that the integration of marketing and operations has resulted as a natural progression and the evolution of the manufacturing paradigm itself. For example, manufacturing has gone through craft industry to mass production, then lean manufacturing, and finally, to agile manufacturing (Gunasekaran, et al., 2002). Most of these changes have been driven (often implicitly) by a need to reduce the perceived gap between operations/production and the marketing and also by efforts to formulate operational policies and activities that match the changing requirements of customers and markets. In his seminal work, Shapiro (1977) argued that increased competition and globalizations' have forced firms to simultaneously seek both efficiency and responsiveness to achieve profitability. He argued that competition shifted the battle between individual firms to battles between entire supply chains. Inter-firm coordination, particularly between marketing and

manufacturing, is essential in order to keep up with competition (ibid.). That being said, the interface between the two functions is often difficult to manage.

Long- and short-term sales forecasts by marketing often serve as the basis for capacity planning and production scheduling. However, production lead-time often imposes restrictions on marketing's promises to customers, which include timely and innovative products designed with customer specifications in mind. As such, conflicts often arise between the functions in those instances where marketing strives for increased product diversity while operations/production wants to reduce it through longer and stable production runs of a narrower product line (Shapiro, 1977) Another area of conflict stems from the basic objectives of the two functions, Typically, marketing strives for revenue/profits maximization, while production attempts to minimize production costs. The result is that organizational performance is often suboptimal. Other areas of conflict include sales forecasting and capacity/production planning, breadth of the product line, delivery and inventory, quality control, customer service.

Based on the work of Balakrishnan et al. (1997) and O'Leary-Kelly and Flores (2002), Swami et al. (2006) developed a taxonomy pertaining to the main business processes requiring integration across the two functions and noted a number of key decision areas, where decisions made by one function have a direct impact on the decisions and actions of the other function. Specifically, they argued that the main areas include product and development decisions for both new and existing products as well as production processes. Manufacturing/operations decisions impact the marketing function since they can either constrain or open new scope for product design. On the other hand, marketing planning decisions involve managing product demand, including long-term demand forecasting, determination of sales targets, and timing of product/sales promotion. Manufacturing planning decisions involve capacity planning and production scheduling and impact marketing's ability to carry out their marketing plan (Swami, et al., 2006). The key decision areas between marketing and production are shown in Table 4.4.

Based in part on the work of Karmarker (1996), Malhotra and Shama (2002) developed an integrative framework designed to address areas of cooperation between marketing and operations/production (see Figure 4.6). They argue that integration is needed at both strategic and tactical levels in order to enhance organizational performance. Specifically, they noted that planning integration is strategic in nature and should include joint decisions on product mix, competitive location, pricing, production, and inventory (Karmarker, 1996).

Table 4.4 Key decisions areas between marketing and operations/production

	Functional domain	
Decision Area	*Manufacturing/operations*	*Marketing*
Process and product development	• Determining changes to existing process capabilities • Determining of new production process capabilities	• Determining changes in product design specifications • Developing new product design specifications
Manufacturing and marketing sales planning	• Developing long-term capacity requirements (resource planning) • Developing long-term production plans (production planning)	• Developing long-range demand forecast • Developing sales plans and timing of product promotions

Source: Adapted from Swami et al. (2006)

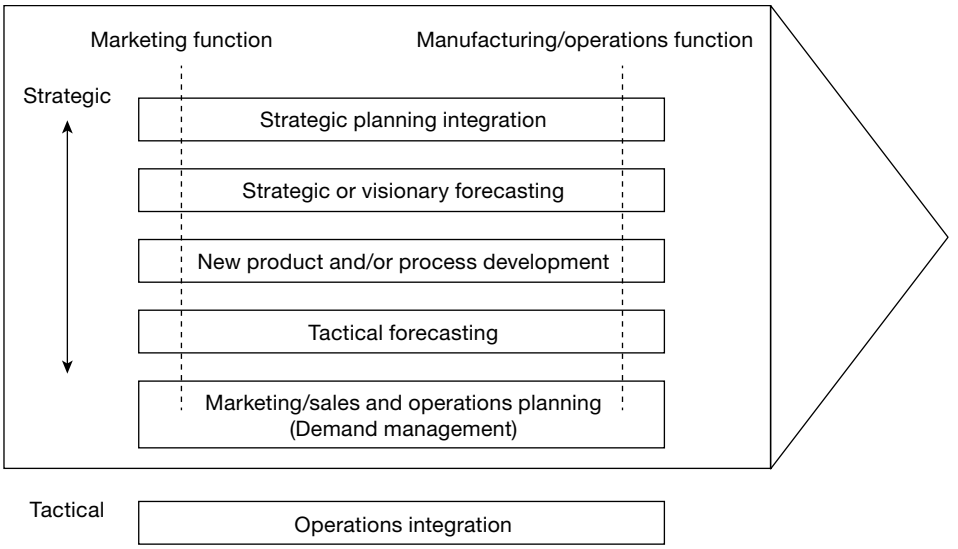

Figure 4.6 A framework for marketing–manufacturing/operation integration (adopted from Malhotra and Sharma 2002)

The framework also differentiates between strategic and tactical forecasting. Strategic forecasting includes technological forecasting, which is a key factor in new product development and a main driver of future growth. Tactical forecasting involves issues pertaining to the operations of the organization. The next level involves integrated planning and control processes that seek alignment between the two functions and the achievement of a common view of market demand. Finally, operational integration represents joint decision making at the operational level which can lead to improvements in product quality, reduced lead times and costs, increased manufacturing flexibility, and improved responsiveness to changing market conditions (Malhotra & Sharma, 2002).

Marketing and finance/accounting

The old adage, "marketing spends the money and finance worries about it," continues to underscore the often adversarial nature of relations between the marketing and finance departments of most organizations (Jenkins & Meer, 2005). It is therefore not surprising that there has been a growing number of calls for more financial accountability in marketing (Lovett & MacDonald, 2005), which would require more cooperation between the marketing and finance functions in most firms. As such, the interface between marketing and finance has become critical as firms increasingly focus on enhancing economic value (Zinkhan & Verbrugge, 2000).

Despite the tremendous amount of literature dedicating to improving the dynamics of the marketing–finance interface, tensions remain between the two functions. Many will trace the origins of the noted friction to a resistance on part of finance/accounting to take a wider view of the business, particularly costing and valuation. Others will note that finance/accounting often lack the knowledge and understanding of the information requirements necessary for the marketing function (Ratnatunga, et al., 1990).

As with other interfaces discussed previously, the main sources of friction tend to stem from differences in background and mindsets. In essence, financial directors tend to value the

known, prefer stability, and are comfortable with measurements while marketing directors are comfortable with the unknown and are rewarded by vision and creativity (Jenkins & Meer, 2005). Jenkins and Meer (2005) note that the fundamental difference stems from the nature of the two functions. Specifically, they argued that marketers and finance executives differ in terms of their orientations and willingness to deal with the unknown. Marketers produce attractive-looking but long-term growth ideas, which often conflict with the typically short-term perspectives of financial officers. Since these ideas often require significant initial investments before they yield profit, financial officers are inclined to reject them. Marketers tend to be focused on the organic growth initiatives they champion while financial officers tend to see the entire company's financial state and must allocate resources accordingly. Finally, financial directors seek certainty in approving large capital outlays. Marketers understand that investments such as advertising that build brand equity are critical to the long-term survival of the organization. However, all is not lost. There is room for a mutually beneficial relationship between the two functions. Jenkins and Meer (2005) argue that the three main areas of focus needed to bridge the divide between marketing and finance are promoting innovation, evaluating growth opportunities, and managing the growth portfolio. Table 4.5 shows the phases of marketing/finance interface in light of the three main reasons for tension between the functions.

In another study, Locander & Goebel (1997) argue that the marketing/finance interface covers a range of strategic and tactical processes within the organizations. Marketing and finance need to interact at the top management level and specifically with regards to strategic planning. At the middle management level, marketing and finance interactions occur in the tools and methods both functions utilize to optimize their respective activities. This interaction is manifested in various processes including operational planning/sales forecasting, budgeting/market planning, and accounting methods/product and pricing decisions. At the tactical level, financial policies and operations planning interact with customer relations and promotional marketing. If the two functions work toward divergent goals and objectives, corporate performance will be adversely affected (Locander & Goebel, 1997). Table 4.6 provides an illustration of the nature of interface between the two functions.

Table 4.5 Stages of interface between marketing and finance (CFOs and CMOs)

Tension	*Adversarial competition*	*Dialogue and debate*	*Collaborative partnership (integration)*
Short- vs. long-term	Marketing budgets cut to meet quarterly profit targets	Prioritization of marketing programs, backed by commitment	Ongoing, consistent process to monitor progress and investments
Broad vs. narrow	Political environment: constant lobbying for funds	Marketers prepare cogent standardized business cases	Transparency and shared ownership of trade-off decisions
Known vs. unknown	Capricious approach to marketing spending; plentiful when times are good, cut when times are bad	Drive for better measurement/ accountability around marketing investments	Mutual appreciation of the need for both discipline and intuition in making risky bets.

Source: Adopted from Jenkins and Meer (2005)

Table 4.6 Finance/marketing interface

Management Level	*Hierarchy*	*Marketing/finance Interactions*
Upper	Strategic planning	• Financial strategy – marketing strategy
Middle	Tools and methods	• Sales forecasting – operational planning • Budgeting – marketing planning • Accounting methods – product and pricing decisions
Lower	Tactics	• Customer relations – financial policies • Promotional marketing – operations planning

Source: Adopted from Locander & Goebel (1997)

Marketing and human resources

The main focus of human resources management (HRM) is on the human capital elements necessary for solving important business problems (Becker, et al., 1997). And while HRM has traditionally been viewed as a "support" function within the organization, growing evidence suggests that HRM systems play a significant role in achieve organizational objectives (Huselid, et al., 1997). Such evidence contributed, in part, to the growing importance of the HRM function and the need to develop HRM policies which are consistent with organizational strategies (Lado & Wilson, 1994).

While evidence regarding the direct relationship between this so-called strategic human resource management (SHRM) and firm performance has been mostly anecdotal, empirical evidence does suggest that there exists a significant relationship between SHRM and marketing orientation (Harris & Ogbonna, 2001). This is not surprising since SHRM requires the nurturing of core organizational values and ensuring that these are consistent with the strategic direction of the business (Huselid, et al., 1997). Both marketing and HRM are concerned with building relationships: marketing is the function tasked with managing external relationships with customers, while HRM is the function tasked with managing internal relationships (Berthon, et al., 1995/1996).

As such, there has been a growing interest in the role of HRM in achieving typical marketing outcomes such as customer satisfaction (Voss, et al., 2002), especially within the context of service industries. Services are characterized by simultaneous production and consumption and the customer often is unable to separate the service experience from the front-line employee (Zeithamel, et al., 2008). Therefore, HRM policies regarding recruiting and training employees are of particular importance. This is evident in the popular "service triangle" (see Figure 4.7), which illustrates the role of employees in delivering on a firm's promises to consumers.

It is HR department's responsibility to manage employees and evidence suggests that positive HRM practices directly affect employees' tendencies to engage in organizational citizenship behavior which, in turn, directly leads to customer satisfaction (Morisson, 1996). Also, satisfying employee–customer relationships was found to be associated with increased employee empowerment (Hartline & Farrell, 1996; Corsun & Enz, 1999). All of these results suggest that HRM influences organizational performance and capabilities including fulfilling consumer needs (Lengnick-Hall & Lengnick-Hall, 1999).

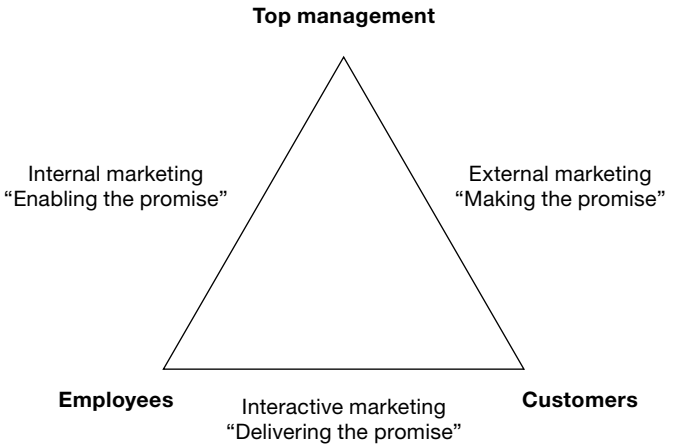

Figure 4.7 The service triangle (adopted from Zeithamel et al. 2008)

Integration tools

Based on the previous discussions, it is obvious that integrating activities across functions are a priority for most firms. Organizations are constantly seeking ways to improve productivity and marketing strategies as a means of remaining competitive in a dynamic global market. Various tools and techniques have been developed and utilized to achieve these objectives and many firms are turning to information systems (IS) since they continue to provide powerful tools in terms of their ability to manage costs and product quality, improve customer service, and reduce cycle times (Joshi, 1998). While focus has traditionally been on the use of information technology to process and deliver information to particular functions, many have now recognized the potential to improve productivity through organizational redesign and integration across functions (ibid.) and even across organizations.

Many managerial concepts and integrative tools have been developed as a result of the diffusion of IT systems in organization processes, including: flexible manufacturing systems, just-in-time, manufacturing resources planning, business process engineering, cycle time reduction, workflow automation, and supply chain management (Chen, et al., 2006; Joshi, 1998). One of the most widely accepted tools for integration is enterprise resources planning (ERP) systems. The basic structural design of an ERP system builds upon one database and a unified interface across the entire organization and provides integrated business solutions for the core processes and the main administrative functions of an organization (Chen, et al., 2006). ERP systems provide two major benefits: (1) a unified enterprise view of the business that encompasses all functions; and (2) an enterprise database where all business transactions are entered, recorded, processed, monitored, and reported (Umble, et al., 2003). While there is ample evidence in the literature regarding the function-specific and organization-wide benefits of ERP systems (Gattiker & Goodhue, 2004), these benefits cannot be fully realized without alignment of organizational imperatives and core business processes (Al-Mashari, et al., 2003). However, alignment can be difficult since it often requires the development of a complex organizational structure.

Setting up process-based and matrix organizations begins with identification of the key processes in the organizations. Each process entails a number of sequential activities. Since a given process typically involves several functional departments, knowledge from these different specialized fields and functional units is needed. However, as already mentioned, matrix structures

often breed ambiguity and role conflict. In order to alleviate this, many have emphasized the role of the *process owner*.

A process owner is responsible for planning and controlling functions regarding the governing of a certain work process in the organization. According to Nesheim (2011), the primary role of the process owner is planning activities, setting goals and expectations, identifying, formalizing, and documenting work processing, providing resources and implementing processes. The process owner must ensure that people performing the various tasks in a process understand them well. The owner must also be capable of reinforcing success, diagnosing deviations, and taking corrective actions if needed. The main issue is: where should the process owner position fit in the organizational structure?

There are two perspectives regarding this. On the one hand, process monitoring duties are simply tasked to current managers. That is, functional managers are given the role of managing a particular process (Davenport, 1993). Some companies have also developed permanent process councils, where functional managers meet to share best practices (Neilson & Couto, 2004). The second and more drastic approach involves structuring the organization according to core processes (Sentanin, et al., 2008) and nominating a process owner with access to top management. This implies the identification of key processes, and those activities that logically belong together to create value for the customer, are grouped together. The vertical structure is based on units that are organized around core processes. Each unit should have a manager and as few hierarchical levels as possible to enable effective communication and decision making. Figure 4.8 provides an illustration of the organizational structured around processes and functions.

The questions remains: Where should marketing be within this structure? The simple answer is everywhere. However, there is a difference between marketing thought and the marketing department. Marketing thought, as per the "marketing concept," should be absorbed in the entire organization but the actual role of marketing staff within the organization after marketing thought has permeated throughout it has often been misunderstood and not fully addressed (Uslay, et al., 2009). As noted by Buzzell (1970), there are often confusions about the role of

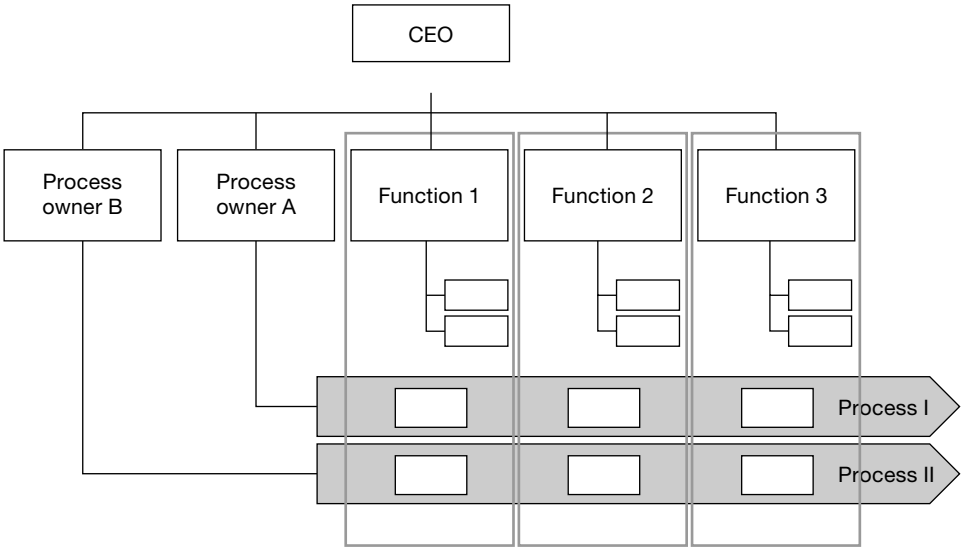

Figure 4.8 Process-based matrix organizational structure

marketing within the typical organizational structure. "Should it be another internal consulting group? A fire-fighting squad? A training school? A watchdog, advising top corporate management" (p. 6). Many argue it should be all of the above. Recently, Sheth & Sisodia (2005) opted for

> a corporate staff function (similar to finance, information technology, legal issues, and human resource management), with both capital and operating budgets. Marketing's domain should include branding, key account management, and business development. The head of corporate marketing should report directly to the CEO, and standing committee of the board should be formed to oversee the company's marketing activities.
>
> *Sheth & Sisodia 2005, p. 12.*

However, the issue is one of process ownership. According to Neilson & Couto (2004), a successful process owner should be a manager whose areas of responsibility intersect most with the process and who is knowledgeable about the impact of the process on customer value. As such, many have argued that marketing should take on the role of process owner (Nesheim, 2011). In the structure illustrated in Figure 4.8, a marketing manager would take on the role of process owner A or B and report to the CEO but would be responsible for process I. The marketing manager (process owner) would monitor the workflow within the process but would also have authority over those individuals in, say, Function 1, which have activities pertaining to the particular process, such as business development or key account management. These individuals would report to the process owner (marketing) and the functional area. Non-process specific individuals would report solely to their function.

However, in today's global community these matrix structures need not be confined to the borders of the organization at all. In fact, most will argue that matrix process structures are naturally global in today's business environment, especially for today's multinational corporations. This is because most processes will involve inter-organizational cooperation through outsourcing. Outsourcing is "the purchase of a good or service that was previously provided internally" (Lacity & Hirchheim, 1993). At its core, outsourcing increases the spread of shared technologies that are driving global integration (IBM, 2008). It is not surprising then that a significant amount of literature has been devoted to IT outsourcing and its role in integration, especially in a global context.

While the extent of outsourcing (IT or otherwise) depends on the industry (Grossman & Helpman, 2002), IT outsourcing has certainly become a major tool for integration across global enterprises (Vromant, 2010). IT outsourcing has been defined as the "act of subcontracting a part, or all, of an organization's IS work to external vendors(s), to manage on its behalf" (Altinkemer, et al., 1994, p. 252). Previous research suggests that the financial benefits from IS outsourcing are not always realized (Lacity & Hirchheim, 1993). However, recent evidence suggests that IS outsourcing, especially international IT outsourcing, has been on the rise during the last few years (Federico, 2010; Grossman & Helpman, 2002; Mahnke, 2001). Since globalization and advances in technology have changed the way business is done, core business processes are no longer viewed unilaterally as proprietary and many firms view their core and non-core business as those that can be retained internally or offloaded to external (often international) partners (IBM, 2008).

Lee et al. (2004) developed a framework rooted in residual rights theory to address the effect of IT outsourcing strategies on outsourcing success. Based on the theory, the party which contributes the most to the value of a relationship (through its investment) should own the residual rights of control (Antras & Helpman, 2004). The theory also postulates that transactions are vertically integrated or *insourced* in order to minimize transaction costs. This would induce

the integrated firm to underinvest in the transaction, while the integrator overinvests (Grossman & Hart, 1986). In the context of IT outsourcing decision, the integrator is the firm and the integrated is the internal IT function (Lee et al., 2004). Therefore, the logic is that an internal IT function may have fewer incentives to invest in IT development than the external IT provider. As such, the theory would suggest an incentive for outsourcing IT activities.

Lee et al. (2004) noted that in the context of IT outsourcing, firms make decisions on transactions with regards to the extent the transactions will be vertically integrated (degree of integration), the extent to which they will relinquish control of transaction fulfillment (allocation of control), and the duration for which they will commit to a transaction decision (performance period). As illustrated in Figure 4.9, a fit between these three decision dimensions is required and once achieved, will likely impact positively three success factors: strategic competences, cost efficiencies, and technology catalysis.

Although outsourcing has been accepted and implemented by businesses, it has also been criticized. On the positive side, it benefits businesses as a cost-saving tactic, allows a business to focus on its core competencies while shifting its non-core functions to outsourcing providers in low-cost countries like China and India. However, the downsides of outsourcing are that it leads to loss of control, bad morale, and reporting/accounting problems (Schniederjans et al., 2005). Outsourcing also leads to loss of local jobs thus affecting the economies of the nations where businesses resort to it. In contrast, insourcing is a recent trend that has emerged as an alternative to outsourcing. It is argued that insourcing leads to better management control, job creation at the local level, and helps avoid the hidden costs of outsourcing (Schniederjans et al. 2005). However, insourcing appears to be more prevalent with manufacturing companies that hire labor and services from an outside organization in order to cut costs. Insourcing also gives business a preview into how outsourcing can work. Done well, insourcing may help a company build a team of skilled people even though it typically takes more time than outsourcing. Insourcing can also help smaller businesses and startups that have little or no experience with outsourcing. Notwithstanding these advantages of insourcing, in our evaluation, outsourcing is a winner because it often gives businesses access to specialized skill sets of resources, shortens time to

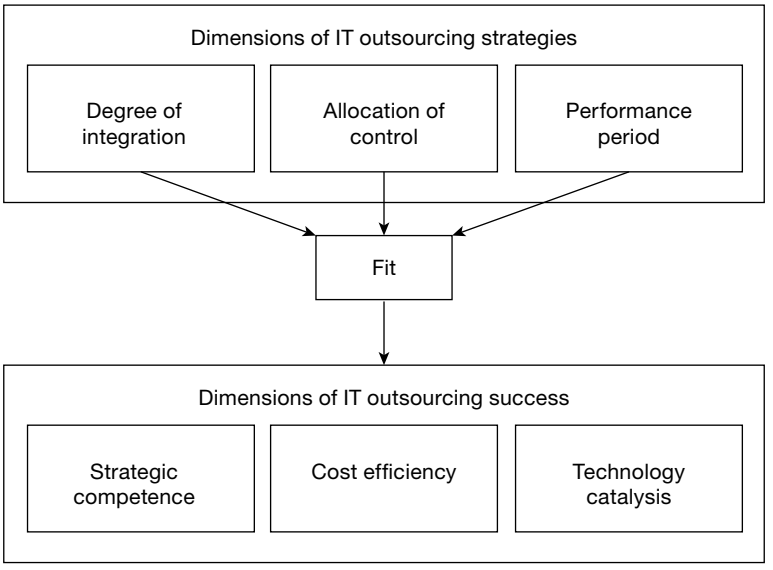

Figure 4.9 "Fit" in IT outsourcing strategies (adopted from Lee et al., 2004)

market, and provides business processes, such as order fulfillment, customer relationship management, supply chain management, new product development, a diversified portfolio of activities, reduced risk, and data security that insourcing simply cannot match – not at least without significant costs. Today, companies of all sizes use outsourcing to manage their non-core functions effectively and efficiently

Process-based marketing management is a broad philosophy and a way of structuring the organization. It represents a natural progression of modern marketing thought including the marketing concept and marketing orientation. Process-based marketing management encompasses many different perspectives and ideas from marketing and non-marketing literature alike. Yet, given the complexities of today's business organizations, its implementation is often difficult. Even though Drucker's vision of complete marketing concept permeation through the organization was never realized in its purest form (Uslay, et al., 2009), there is no doubt that the role of marketing in organizations today has been broadened and the marketing function has been elevated to powerhouse status. Regardless of the actual structure, marketing's "most important contribution will be enabling the firm process information to knowledge…will act as internal Infomediary…a privacy guard…as an organizational educator…as an integrator…as coordinator and conflict manager" (Achrol & Kotler, 1999, pp. 150–151).

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5

Future of theorizing in marketing

Increasing contribution by bridging theory and practice

Roderick J. Brodie

Abstract

While much has been achieved with theory development in marketing, further progress will be seriously hampered unless there is fuller empirical investigation of general theoretical structures and more explicit consideration is given to bridging theory and practice. This chapter addresses these two issues. First, the nature of theorizing and the types of theoretical contribution that can be made are considered. The next section examines the reasoning skills for theorizing in the contexts of the discovery of theory and the justification of theory. The third section expands on the theorizing process by elaborating on the role of middle range theory in bridging theory and practice. The final sections illustrate the middle range theory process drawing on the author's recent work.

Key words

Theorizing, reasoning skills for theorizing, discovery of theory, justification of theory, middle range theory.

Introduction

In their *Journal of Marketing* article "Charting New Directions for Marketing", Day and Montgomery (1999) recognize the important role that theory plays in advancing knowledge in the marketing discipline. While much has been achieved with theory development, they see that further progress will be seriously hampered unless two issues about theorizing are resolved. This leads them to list "rethinking the role of theory" as one of the three most important challenges for academic research for the marketing discipline in the 21st century.

The first issue raised is the disconnection that is arising between theory formulations and testing. Day and Montgomery observe that the discipline has reached a stage of developing elaborate theoretical structures. However, the complexity of these theories means that they have not been investigated empirically in a comprehensive way. Gummesson (2004) reflects on the issue by stating:

> Strange as it is to me, hypothesis testing has been placed on the highest level of scientific excellence in social sciences, including academic work in marketing. Researchers in marketing seem to settle for theory on a low level of abstraction or generality and have difficulties seeing the broader, systemic context; the core of a phenomenon is obscured by details and fragments.
>
> *(p. 317)*

An examination of the marketing literature confirms Day and Montgomery's and Gummesson's concerns. The empirical research tends to be of limited scope based on quantitative studies which have culminated in a narrow body of empirical generalizations (Hanssens 2009, Bass and Wind 1995). For example, the review of empirical articles by Svensson, Helgesson, Slåtten and Tronvoll (2008) published in the leading US based journals in the period 2000 to 2006 shows that 89 percent of these were within a quantitative framework using a positivistic perspective. In addition, the majority of these quantitative studies were not theory based. The review article by Keller and Lehmann (2006) titled "Brands and Branding Research: Research Findings and Future Priorities" published in *Marketing Science*, provides further evidence about the lack of attention to theory in the discipline. Their article gives little consideration to the ways in which established theoretical perspectives from economics (e.g. signaling theory) and psychology (e.g. associative network memory theory) shape branding research. In addition, the theoretical perspectives of the Service Dominant logic (Vargo and Lusch 2004) and Consumer Culture Theory (Arnould and Thompson 2005) that inform emerging areas, such as brand relationships and brand experience, were not considered.

The second issue identified by Day and Montgomery concerns the disconnection between theoretical advances and managerial usefulness. General theoretical structures by their nature are more removed from the empirical world. This inevitably leads to a greater level of abstraction in terms of the conceptualizations and the terminology. Thus a disconnection develops between the theory and the concepts and language that is used by practicing managers. For example, the key terms of the Service Dominant logic include "service", "value co-creation", "resource integration", "operant resources", "operand resources" and "value networks" (Vargo and Lusch 2008). These terms have little meaning to practicing managers.

A decade and a half later, after the publication of Day and Montgomery's article, the leading journals in the marketing discipline have failed to respond to their challenge. Reibstein, Day and Wind (2009) in their *Journal of Marketing* guest editorial "Is Marketing Academia Losing its Way?" claim that there is "an alarming and growing gap" between the academic research published in the leading journals and the needs of marketing executives. They suggest that academic knowledge development processes are becoming less relevant to marketing executives because academic research is not keeping up with the fast-changing and complex interactive market-space. They conclude that this has gone beyond the familiar dilemma of academic research pitted against practical relevance, and is undermining the advancement of the discipline.

The review by Yadav (2010) of the articles published in the leading marketing journals heightens concern for the state of theorizing in the marketing discipline. Yadav's analysis indicates that the number of conceptual articles is declining dramatically. Thirty percent of the articles published in the *Journal of Marketing* in the 1980s were conceptual, compared with fewer than 7 percent of the articles published in the period 2003 to 2007. This trend is also identified by Stewart and Zinkhan (2006) and MacInnis (2011). This leads these authors to suggest that if the discipline is to advance, the leading journals need to prioritize conceptual work.

Gary Frazier as the incoming editor of the *Journal of Marketing* (Frazier 2011), has responded to the need for the discipline to prioritize theorizing by appointing two associate editors to assist

in the review and crafting of theory articles. In his editorial he also encouraged the submission of qualitative and ethnographic papers, but did little to address the underlying issues of "rethinking the role of theory" raised by Day and Montgomery (1999). Editors of other leading established journals have also encouraged theory papers. Newer journals are supporting theory development too. For example, *Marketing Theory*, which was launched in 2001, provides a clear signal regarding the absence of and need for theoretical contributions. The *Journal of Service Research*, launched in 1997, has responded positively to the need for more conceptual papers and in volume 14, 25 percent of the articles were theoretical. However, there are still questions about the nature of the conceptual articles being published, and whether they are fully embracing the challenges offered by Day and Montgomery. While the review of conceptual articles by Yadav (2010) reveals a range of scientifically sophisticated papers, few make significant conceptual advances or have direct practical application.

This chapter meets with the ethos of the title of the book (*Companion to the Future of Marketing*) by providing critical thinking and exploration of the future of theorizing in marketing, by introducing middle range theory (MRT) into the theorizing process. While MRT has been used in other management disciplines, such as organization studies (Pinder and Moore 1980), little explicit consideration has been given to MRT in the marketing discipline. An exception is the article by Leong (1985).

In this chapter we outline how MRT can be used in a theorizing process that meets with Day and Montgomery's challenges of fuller empirical investigation of general theoretical structures and explicit consideration of the critical issue of bridging theory and practice.

We demonstrate how MRT serves as a bridge between general theoretical structures and empirical investigation. The multi-theory approach facilitates moving out the current paradigmatic "silos" that constrain knowledge development in the marketing discipline and taking a broader ontological and epistemological perspective that uses both qualitative and quantitative methodologies. Thus it embraces what Arndt (1985, p. 21) refers to as "the yin and yang of progress in marketing". Central to this theorizing process are the reasoning skills required to both discover and justify conceptual ideas.

While the question "what is theory?" has been debated extensively, for the purpose of this chapter we use a simple general definition: "theory is a statement of concepts and their interrelationships that shows how and/r why a phenomenon occurs" (Gioia and Pitre 1990). The chapter distinguishes between three levels of theoretical abstraction.

- General or grand theory: this refers to conceptions that utilize a broad theory that is framed at the highest conceptual level within a domain in marketing. It may consist of fundamental premises that are broad and integrative in scope.
- Middle range theory: this is theory that considers a less broad scope of phenomena and is more specific. It may consist of a set of propositions that bridge the gap between the abstract explanations provided by general theory and the empirical observation of marketing practices.
- Applied theory: this is theory that aligns more closely to the language, mental models and practices of managers. The conceptual frameworks may consist of statements and metaphors that relate directly to empirical phenomena.

MRTs can be seen as the intermediary body of theory that interfaces between the empirical and theoretical domains (Figure 5.1). Within the theoretical and empirical domains it is recognized that the boundaries between marketing and other management disciplines overlap. Thus theorizing in marketing will draw on these other disciplines.

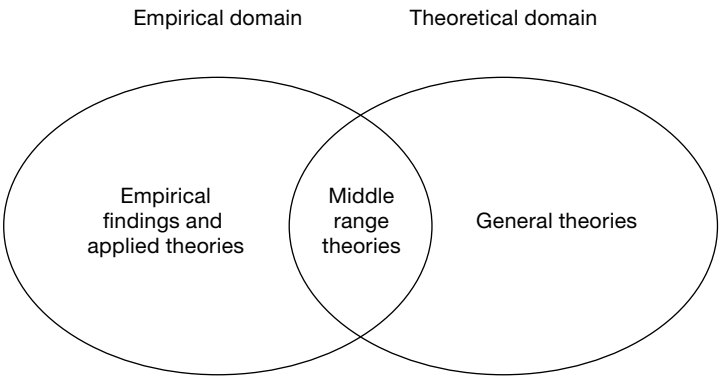

Figure 5.1 Interface between the empirical and theoretical domains

The chapter proceeds by first considering the nature of theorizing and the types of theoretical contribution that can be made. In the next section the reasoning skills for theorizing are examined in the contexts of discovery and justification of conceptual ideas. The chapter then elaborates on the integrative role MRT plays in the process of theorizing. The final sections illustrate the MRT process by drawing on the author's recent work.

Theorizing and theoretical contribution

Weick (1995) in his essay "What Theory is Not Theorizing Is" laments that in organizational studies there are few attempts to develop and use what he refers to as strong theory. In particular he criticizes researchers of "lazy theorizing in which people try to graft theory onto stark sets of data" (p. 385). This occurs because there is confusion between theory as the outcome and theorizing as a process. Theory is often presented in the form of references, data, lists of diagrams and hypotheses, which, while they are important parts of the theorizing process, are not theory per se. He states:

> The process of theorizing consists of activities like abstracting, generalizing, relating, selecting, explaining, synthesizing, and idealizing. These ongoing activities intermittently spin out reference lists, data, lists of variables, diagrams, and lists of hypotheses. Those emergent products summarize progress, give direction, and serve as place-markers. They have vestiges of theory but are not themselves theories. Then again, few things are full-fledged theories. The key lies in the context – what came before, what comes next?
>
> *(p. 389)*

More recently, Corley and Gioia (2011) build on the distinction between theory as the outcome and theorizing as a process, by considering the question "what constitutes a theoretical contribution in the management discipline?" They suggest that there are two important considerations; the originality of the contribution, and the usefulness of the contribution. The originality of the contribution relates to the extent that the work offers new theoretical linkages that have rich potential for the domain of study. These may range from incremental new insight to extensive new insight. When examining the usefulness of the contribution of a piece of theoretical research they distinguish between academic (scientific) contributions and contributions towards practical usefulness. This leads to a two by two matrix to examine the contribution (Table 5.1).

Table 5.1 Theoretical contributions in the marketing discipline

Substantial insight		
Incremental insight		
	Academic usefulness	Practical usefulness

Corley and Gioia's (2011) assessment of the articles published in the *Academy of Management Review* in the last two decades shows that most conceptual articles offer only incremental scientific insight and that the theorizing processes neglect practical usefulness. Thus they call for a broadened approach to theorizing that facilitates greater focus on providing extensive new insight and also explicitly takes into account practical usefulness. An assessment of the conceptual articles that are published in leading marketing journals leads to a similar conclusion to that of Corley and Gioia. Gummesson (2004) suggests that the marketing discipline has got "stuck in the middle, neither being firmly based in real world data, nor reaching a sufficient level of abstraction" (p. 317).

Contexts and reasoning skills for theorizing

The importance of considering both the contexts of discovery and justification explicitly when theorizing is recognized by Hanson (1958) in his book *Patterns of Discovery*. For theory to advance, consideration needs to be given to how theories are conceived and developed, prior to focusing on the context of justification. Yadav (2010, p. 2) distinguishes between the two contexts:

- The context of discovery is related to the conception of new ideas (i.e., new constructs) or to the creative synthesis of existing ideas (i.e., new relationships between well-accepted constructs).
- The context of justification is the realm in which data and analytical procedures are employed to establish the plausibility and acceptability of these ideas.

Yadav (2010) then elaborates on the process of theorizing in the two contexts. The context of discovery can be seen as an initiating theory development; involving the definition of the problem within the domain of interest; and the development of initial ideas. Various techniques can be used, which include using analogies, leveraging an established theory to explore a new or unexplained phenomenon, moving to different levels of analysis and combining previously unconnected fields. In contrast, the context of justification can be seen as a theory assessment and enhancement. Various techniques can be used, which include benchmarking the focal theory against well-established criteria for evaluating theories, developing theoretical enhancements to address mixed/ambiguous evidence, and identifying and addressing gaps in the conceptualizations (adding missing antecedents, mediating processes, and/or constructs).

Taking into account the contexts of discovery and justification, MacInnis (2011) identifies reasoning skills that are critical in facilitating conceptual thinking. These are: divergent reasoning, logical reasoning, comparative reasoning and syllogistic reasoning. She suggests that theoretical reasoning should encompass the sequence of envisioning ideas, explicating ideas, relating ideas and debating ideas. At these four stages the context of discovery interfaces with the context of justification (Table 5.2).

Bridging theoretical and empirical domains with middle range theory

As was discussed in the Introduction, general theories can be distinguished from those theories that are at middle range level on the basis of scope and integration. The broader scope of general theories means that they need to explain a larger number of phenomena, while their integrative nature means that they serve to unify less general theories. This section explores ways to overcome the difficulty of the interface between general theory and empirical research by introducing an intermediary body of theory which has been referred to as range theory (MRT) into the theorizing process.

The initial exploration of the need for more explicit consideration to be given to MRT in the social sciences came from Merton (1967) in sociology. He defines MRT as:

> Theories that lie between the minor but necessary working hypotheses that evolve in abundance during day-to-day research and all-inclusive systematic efforts to develop a unified theory that will explain all the uniformities of social behaviour, social organisation and social change.
>
> *(p. 39)*

Thus, rather than attempting to explain everything about a domain within a discipline, the theoretical focus is on a subset of phenomena relevant to a particular context. MRT is concerned with explicit statements about the relationships between specific variables that can be investigated empirically. In contrast, general theories are viewed as too broad to generate those statements (whether hypotheses or propositions).[1] In his cornerstone article "Theory Construction as

Table 5.2 Reasoning skills for theorizing

	Task	*Context of discovery*	*Context of justification*
1. Envisioning ideas	Divergent reasoning	Identifying ideas with fresh reasoning	Revising ideas with critical reasoning
2. Explicating ideas	Logical reasoning	Delineating ideas with deductive reasoning	Summarizing ideas with inductive reasoning
3. Relating ideas	Comparative reasoning	Differentiating ideas drawing on analytical reasoning	Integrating ideas drawing on analogical reasoning
4. Debating ideas	Syllogistic reasoning	Advocative reasoning supporting ideas	Critical reasoning challenging ideas

Source: Adapted from MacInnis (2011)

Disciplined Imagination", Weick (1989) provides further reasons for MRT. He states that general theories about organizations involve so many assumptions, and such a mixture of accuracy and inaccuracy, that virtually all conjectures remain plausible. He argues that self-interest can become a substitute for validation during theory construction. Thus: "Middle range theories are a necessity if the process is to be kept manageable" (p. 516).

MRT does not need to be restricted to drawing on only one general theory. It takes a multiple theoretical perspective and can draw on theories outside the marketing discipline. This process may include theories from within the management disciplines and also from the social sciences (such as economics, political theory and cognitive psychology). This leads to MRTs that are inherently interdisciplinary in nature, so it is not constrained by a dominant general theory (Saren and Pels 2008). MRT can thus facilitate moving out the current paradigmatic "silos" that constrain knowledge development in the marketing discipline to a multi-paradigmatic approach (Möller, Pels and Saren 2009).

As outlined in Figure 5.1, MRT can be seen as the intermediary body of theory that interfaces between the empirical and theoretical domains. Within those two domains, Brodie, Saren and Pels (2011) explored the MRT theorizing processes. Dual circles of scientific enquiry, which are in the contexts of discovery and justification are introduced, where MRT bridges empirical and theoretical domains (Figure 5.2). The first circle of enquiry is in the empirical domain, where MRT interfaces with applied theory, and includes empirical findings, contextual descriptions and theory applications. In the context of discovery, the propositions and hypotheses of MRT are used to formulate and interpret empirical findings and contextual descriptions, and can lead to theory applications. In the context of justification, applied theory is used to shape and verify the propositions and hypotheses of the MRT. The second circle of enquiry is in the theoretical domain, where MRT interfaces with general theories. Here MRT theories can be used to consolidate general theories by expanding their scope and making them more explicit. In addition, general theories can be drawn on to make MRT more concrete and hence more explicit.

The diversity of these processes and the synergies between them are of prime importance. Equally important are the reasoning skill for initiating theory development (context of discovery) and theory assessment and enhancement (context of justification) in the sequence of envisioning ideas, explicating ideas, relating ideas and debating ideas outlined in Table 5.2. In particular, it has

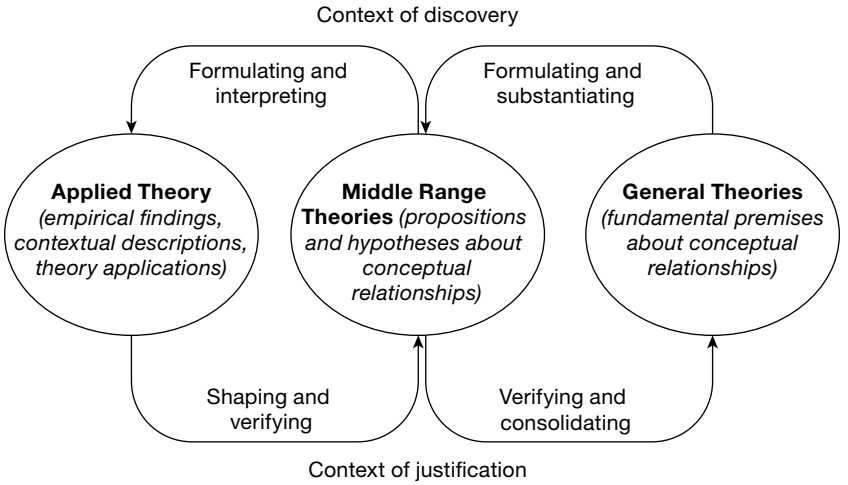

Figure 5.2 Bridging role of middle range theories (Adapted from Brodie et al. 2011)

been suggested that abductive reasoning plays a key facilitating role in interfacing theoretical knowledge and empirical understanding (Dubois and Gadde 2002). While abductive reasoning is usually discussed in the context of qualitative research (Coffey and Atkinson 1996), we suggest it is also relevant to quantitative research.

While the MRT process accommodates a positivist perspective, it is not restricted to this perspective and can be based on a multi-paradigm perspective (Gioia and Pitre 1990, Lewis and Grimes 1999). There can be considerable diversity in terms of the ontologies (nature of reality) and epistemologies (nature of knowledge generated) required to advance knowledge. Competing paradigmatic positions should be a cause for celebration because they offer the opportunity to examine the social world through different lenses (Bryman 2008). We suggest that the scientific "realist contingents" (Macclaran, Saren, Stern and Tadajewski 2009), including critical realism (Easton 2002), provide the broader philosophical foundations (Hunt 1990, 1992). However, this need not exclude researchers who take a constructivist perspective.

Davies and Fitchett (2005) in their article "Beyond Incommensurability? Empirical Expansion on Diversity in Research" suggest that the problem of incommensurability associated with a multi-paradigm approach has been overstated. They state:

> The lasting legacy of the incommensurability debate is that it draws attention to, and demarks difference as a core feature of all disciplinary identity. Differences can be the source of conflict and power but also enhanced understanding. An uncritical adherence to the concept of incommensurability can be seen as placing somewhat artificial barriers around the exchange and discussion of research from studies in other paradigmatic camps. A generation of researchers have been trained to conceptualize research issues in terms of paradigmatic boundaries and to underplay their permeability and interrelation.
>
> *(p. 286)*

The next sections draw on recent research by the author to elaborate on how the MRT theorizing process meets Day and Montgomery's challenges of fuller empirical investigation of general theoretical structures, and explicit consideration of the critical issue of bridging theory and practice.

The research demonstrates how MRT bridges the empirical and theoretical domains. In addition, they show how MRT directs attention to managerial issues and concerns, providing the problem solving context for the theorizing process. Thus MRT provides for the means for theory and practice to interact. While the language and concepts of general theories tend to be abstract and removed from reality, the language and concepts of MRT can be more concrete and thus aligned more closely to marketing practice; and so can be seen as a bridging lexicon (Brodie, Hollebeek and Smith 2011).

Developing a typology of markets and marketing

Since the 1980s, a fragmentation of mainstream marketing has occurred. Greater emphasis is now placed on marketing processes, relationships with customers and relationships with other stakeholders including suppliers, channel intermediaries, and other market contacts. In the 1990s a research group at the University of Auckland Business School established an international investigation into marketing practices. This became known as the contemporary marketing practices (CMP) research programme and resulted in over fifty published research articles (Brodie, Coviello and Winklhofer 2008). This included an article in the *Journal of Marketing* (Coviello, Brodie, Danaher and Johnston 2002). The article provided evidence to challenge the

view that the marketing discipline was undergoing a paradigm shift from transactional to relational practices.

Central to the CMP research programme was the development of a typology of market and marketing practices. Within a particular academic domain, typologies play an important role as MRT, because they provide a bridge between general theories and empirical phenomena (Doty and Glick 1994). Typologies differ from classification systems, as they can be used to identify multiple theoretical or "ideal" types, where the market and market practices are combinations of these ideal types (McKelvey 1975).

The CMP typology was arrived at using the dual circles of enquiry shown in Figure 5.2. Six general frameworks that relate to economic and social processes were used as the theoretical foundation for the typology. They are: services marketing, inter-organizational exchange relationships, channels, networks, strategic management and the value chain and information technology within and between organizations (Coviello et al. 1997). In parallel with its process of drawing on general theories, the typology was also informed by the empirical domain with the second circle of scientific enquiry in Figure 5.2, where MRT draws on applied theory and empirical research about marketing practices. This included surveys undertaken with middle managers, who acted as participant observers for their organizations. In addition to responding to a structured questionnaire, respondents were required to reflect on the practices in their organizations. This provided qualitative assessments of the organization's marketing practices, changes to marketing practices in general, and any influences on these practices. When analysing the results, researchers moved between statistical analysis of the quantitative data and the qualitative analysis of individual responses and groups of cases. Thus the MRT theorizing process was characterized by reasoning; where conceptual work is intertwined with empirical research.

The CMP typology recognizes concepts associated with market activity, and concepts associated with management activities. The five concepts or dimensions relating to external, or market activity are: purpose of exchange, nature of communication, type of contact, duration of exchange and formality of exchange. The four concepts or dimensions relating to management activity are: managerial intent, managerial focus, managerial investment and managerial level of implementation. Having identified the dimensions that distinguish between market and managerial practices, the literature was then re-analysed based on those dimensions, to identify various ideal types of practice. For the initial classification scheme, four practices were subsequently identified (Coviello, Brodie and Munro 1997). The three most relevant to contemporary marketing are:

> Transactional practice is the traditional managerial approach. It is defined as a practice using the "4P" transactional approach to attract customers in a broad market or specific market segment.
>
> Traditional relationship practice is the relationship approach articulated since the 1980s and which has its roots in service marketing and B2B marketing. It is defined by the development of personal interactions between employees and individual customers.
>
> Network practice is characterized by development of relationships with customers and firms within the network, and has its roots in the Industrial Marketing and Purchasing (IMP) Group.
>
> *(Axelsson and Easton 1992)*

With the emergence of e-business and the internet in the 1990s, it became necessary to revise and expand the original CMP framework to include another generic type of practice. The framework now recognized the powerful influence that information and communication

technologies (ICTs) were having in facilitating change in business and marketing. As with the development of the original CMP typology, an extensive content analysis was undertaken of the marketing, management and information systems literature to conceptualize the emerging practice. Consistent with the original typology, attention was given to the five market-related dimensions and the four management-related dimensions that distinguish this practice from other practices. This led to an additional practice (Coviello, Milley and Marcolin 2001):

> Interactive practice is defined as "using interactive information and communication technologies to create and mediate dialogue between the firm and identified customers."

Importantly, the MRT theorizing process used by the CMP research programme enabled the development of a comprehensive typology that could investigate multiple practices empirically. Rather than a simple either/or dichotomous classification of practices (transactions versus relationships), the typology assumes alternative types of practices within firms are not assumed to be mutually exclusive. Thus empirical research can identify firms with different combinations of transactional, relational, network and interactive practices. Some firms may have practices with a stronger transactional emphasis while others have practices with a strong relational emphasis, and yet other firms may have practices that are pluralistic. This broader view of markets and marketing means the typology can be used to investigate a comprehensive range of relevant empirical phenomena and then to classify them into categories that are not mutually exclusive.

Empirical investigation of the service dominant logic with the CMP typology

Vargo and Lusch's (2004) article published in the *Journal of Marketing* provided a "logic" to integrate the fragmentation that was taking place in the marketing discipline and unify the traditional transactional perspective with the emerging relational perspectives. It has become known as the Service-Dominant logic (S-D logic). Fundamental to the S-D logic are the foundational premises (FPs) that elaborate on the nature of service systems. The FPs can be thought of as precursors to the development of a general theory of markets and marketing (Lusch and Vargo 2006). The original eight premises proposed in 2004 have now been modified and extended to ten. Of these, Vargo and Lusch (2008) suggest that four are core to developing a general theory of markets and marketing. They are:

FP1: Service is the fundamental basis of exchange.
FP6: The customer is always a co-creator of value.
FP9: All economic and social actors are resource integrators.
FP10: Value is always uniquely and phenomenologically determined by the beneficiary.

To date, the development of the S-D logic has been in the theoretical domain and focused on the refinement of the fundamental premises that provide the foundation for a general theory. In contrast, the CMP research programme has been largely in the empirical domain, using MRT to investigate marketing practices empirically. The research approach has concentrated on describing and generalizing the practices of managers and organizations. Accordingly, an emphasis upon practical problem solving has been central to these CMP investigations.

Brodie, Saren and Pels (2011) used the CMP typology to undertake a preliminary empirical investigation of the S-D logic. This investigation follows the theorizing process outlined in Figure 5.2. In the context of discovery in the theoretical domain, the foundational premises of S-D logic and other conceptual discussion can be used to derive empirically testable propositions

about S-D logic practices. In the empirical domain the CMP typology can then be used to investigate the propositions empirically. In the context of justification, in the empirical domain the findings about S-D logic practices can be used to refine the MRT typology. This in turn is able to inform the typology and leads to the refinement and consolidation of the S-D logic and the emerging general theory of markets.

Two empirical CMP studies provided quantitative insight about S-D logic practices. The first by Coviello, Brodie, Brookes and Palmer (2003) employed data collected in 2000 and 2001 with a sample of 149 firms in New Zealand (n = 48) and the UK (n = 101). The second study by Brodie, Winklhofer, Coviello and Johnston (2007) analysed survey data from US firms collected in 2002 (n = 212) and 2005 (n = 139). Four propositions for the existence of the S-D logic practices can be derived from the foundational premises and other conceptual writings about the S-D logic.

The first two propositions are:
Proposition 1: S-D logic practices are based on network practices.
Proposition 2: S-D logic practices are based on interactive practices.

Proposition 1 is derived from foundational premise 9 of the S-D logic ("all economic and social actors are resource integrators"), which is underpinned by network theory; Proposition 2 is derived from foundational premise 6 ("the customer is always a co-creator of value"), which emphasizes the interactional nature of value creation. Propositions 1 and 2 can be considered as necessary but not sufficient conditions for the existence of S-D logic practices.

The NZ/UK sample revealed that 50 percent of the firms had medium levels of network practices while 35 percent had high levels. The US sample had a similar profile for network practices, so there is moderate support for the condition stated in Proposition 1. For interactive practices the NZ/UK sample revealed that 58 percent of firms had medium levels but showed only 5 percent as having high levels. In contrast, for the US sample 47 percent medium levels of interactive practices were shown, and 20 percent had high levels. There is thus less support to meet the condition stated in Proposition 2.

The third proposition is:
Proposition 3: S-D logic practices are based on pluralistic practices.

The third proposition is not derived directly from the FPs but comes from interpretation of them. For example, Vargo (2009) states: "services and goods co-exist with a common purpose service" (p. 106). In terms of the CMP results, Proposition 3 is met if there is a co-existence of transactional/relational practices and network/interactive practices. Proposition 3 is thus a necessary but not sufficient condition for the existence of S-D logic practices. A cluster analysis of the NZ/UK data reveals that approximately a third of the sample had pluralistic practices. For the US sample there were similar results. Hence it can be concluded that only approximately a third of firms meet the condition stated in Proposition 3.

The fourth proposition is:
Proposition 4: S-D logic practices are pluralistic and transformational; leading to the reframing of the business approach.

The fourth proposition is also not derived directly from the FPs but comes from the interpretation of them – it is based on Vargo's (2009) view of "transcending relationships" aligned with the

transformational ideas outlined by Orlikowski (2000). Proposition 4 can be considered as a necessary and sufficient condition for the existence of S-D logic practices. With regard to Proposition 4 for the NZ/UK sample, approximately a third of the firms in pluralistic clusters reported management processes that were transformational. Thus approximately just over one tenth of the total sample has pluralistic practices that are transformational. For the US sample there were similar results. Thus it can be concluded that approximately one tenth of firms meet the condition stated in Proposition 4.

These results are challenging because only a small proportion of firms have marketing practices that are consistent with the S-D logic. However, they should be treated as exploratory because the CMP typology and the research instrument were not developed specifically for empirical investigation into the S-D logic, and thus the measures used have limitations. This is especially the case for the investigation into business transformation (Proposition 4). Rather than focusing on the empirical results, what is more important is that the investigation demonstrates an MRT theorizing process that meets Day and Montgomery's challenge to conduct fuller empirical investigation into general theoretical structures.

Using Middle Range Theory to define customer engagement

Recently Brodie, Hollebeek, Juric and Ilic (2011) used MRT to define the conceptual domain of CE. Of critical importance in this study is the role of general theory to show that the concept is conceptually distinct from traditional relational concepts such as involvement and participation. In particular the authors drew on the S-D logic (Vargo and Lusch 2008) to inform the conceptual domain of CE, but recognized other general theories, including Consumer Culture Theory and Social Practice Theory, as having potential contributions in this emerging area.

The theorizing process was also informed by managerial practice where the term CE, and its variants such as consumer engagement and brand engagement, have been used extensively. Over the last decade a range of definitions has been suggested for various engagement forms, which illuminate the concept from different stakeholder and/or contextual perspectives (such as customer behavior, online communities, and also in specific business practice applications). The concept of engagement has also been used extensively in the social science and management literatures and more recently in the academic marketing academic literature. A systematic review identified the variety of conceptual approaches that highlight different aspects of the concept.

The dual circles of enquiry (Figure 5.2) of general theory interfacing with MRT, and applied theory interfacing with MRT, lead to development of five fundamental propositions (FPs) that define the conceptual domain of CE. The five FPs are:

FP1: CE reflects a psychological state, which occurs by virtue of interactive customer experiences with a focal agent/object within specific service relationships.
FP2: CE states occur within a dynamic, iterative process of service relationships that co-creates value.
FP3: CE plays a central role within a nomological network of service relationships.
FP4: CE is a multidimensional concept subject to a context- and/or stakeholder-specific expression of relevant cognitive, emotional and behavioral dimensions.
FP5: CE occurs within a specific set of situational conditions generating differing CE levels.

The five FPs were used to generate research questions to facilitate the refinement of the conceptual domain of CE, thus facilitating an ongoing theorizing process (Brodie et al. 2011). The research questions derived from FP1 focus on exploring the fundamental nature of

customers' interactive engagement experiences across contexts. The research questions generated from FP2 focus on developing a deeper understanding of the role of CE in a dynamic, iterative process of value co-creation in service relationships. Further, the research questions derived from FP3 focus on the nature of the conceptual relationships between CE and other relational concepts within particular dynamic service relationships. The research questions developed from FP4 address the multidimensional nature of CE, which is affected by the particular context- and/or stakeholder-specific expression of focal cognitive, emotional and/or behavioral CE dimensions. Finally, the research questions derived from FP5 focus on the determinants of specific CE levels.

The MRT theorizing process to investigate CE allows for general theory to be aligned with the more concrete, actionable concepts and language of business practice. Thus it meets with Day and Montgomery's critical challenge of bridging theory and practice explicitly. It is important to emphasize that the CE concept and the five FPs reside within the domain of MRT. This means CE should not be seen as representing a meta-concept, existing within the realm of general theories such as the S-D logic. Rather it should be seen as a bridging concept and as part of a bridging lexicon (Brodie, Hollebeek and Smith 2011). It is the general theoretical perspective of the S-D logic that provides the theoretical foundation to delineate CE from traditional relational concepts, such as "involvement" and "participation", which have theoretical roots in a narrower perspective of relationships. Without the transcending perspective of relationships provided by the S-D logic, CE cannot be shown to be theoretically distinct from the traditional relational concepts and it will be confused as "old wine in a new bottle" (Brodie and Hollebeek 2011).

Conclusion

This chapter explores the future of theorizing in marketing by focusing on the issue of how to increase the theoretical contribution in the marketing discipline by bridging theory and practice. This is achieved by introducing MRT into the theorizing process. While MRT has been used in other management disciplines such as organization studies, until recently little consideration has been given to it in the marketing discipline. The reason for introducing MRT is that it facilitates a theorizing process that explicitly responds to Day and Montgomery's (1999) challenges of fuller empirical investigation of general theoretical structures, and explicit consideration of the critical issue of bridging theory and practice.

The chapter focused initially on theorizing as a process, as well as theory as the outcome. It is suggested the theorizing process needs to lead to practical contributions as well as academic (scientific) contributions. Thus theorizing needs move beyond the positivistic perspective that focuses on theory testing and develop an emphasis on theory discovery. This means that there is a need for a broader range of theorizing skills, and also requires that conceptual work becomes intertwined with empirical research. The theorizing process has multifaceted roles in the sequence of discovery to justification of ideas. This process is facilitated through the use of reasoning skills to envision, explicate, relate and debate ideas.

Within this theorizing process MRT serves as a bridge between theoretical and empirical domains. MRT links dual circles of scientific enquiry to bring together theoretical reasoning and the empirical investigation. MRT provides for a multi-theory approach that facilitates moving out of the current paradigmatic 'silos' that constrain knowledge development in the marketing discipline; adopting a broader ontological and epistemological perspective that permits pluralism in the qualitative and quantitative methodological approaches. While the MRT process can accommodate a positivist perspective, it is not restricted to this perspective and indeed aligns with the multi-paradigm perspective (Gioia and Pitre 1990). There can be

considerable diversity in terms of the ontologies (nature of reality) and epistemologies (nature of knowledge generated) required to advance knowledge. Competing paradigmatic positions should be a cause for celebration because this offers the opportunity to examine the social world through different lenses (Bryman 2008). We suggest that the scientific realist contingents (Hunt 1990, 1992), including critical realism (Easton 2002) provide the broader philosophical foundations needed to guide the process. However, this does not exclude a constructivist perspective.

To elaborate on the MRT process, three applications based on the author's recent work have been examined. The first outlines the development of a typology of market and marketing practices. The second application outlines how CMP typology was used to investigate the general theoretical framework of the Service Dominant logic empirically. In the third application the MRT process was used to define the emerging concept of customer engagement. In these applications MRT facilitated a theorizing process that led to closer alignment of the more concrete, actionable concepts and the language of business practice. It allowed for fuller empirical investigation of general theoretical structures and at the same time addressed the critical issue of bridging theory and practice explicitly. Thus, it provides a solution to researchers getting "stuck in the middle, neither being firmly based in real world data, nor reaching a sufficient level of abstraction" (Gummesson 2004, p. 317)

In conclusion, while much has been achieved with theory development in the marketing discipline, further progress will be seriously hampered unless the two issues identified by Day and Montgomery are embraced more fully. Fundamental to making progress is the need to pay more attention to how theorizing as a process contributes to the advancing knowledge in the discipline. This change involves rethinking the design, production and dissemination of marketing scholarship. The recent *Journal of Marketing* article "Marketing Scholarship 2.0" by Lutz (2011) provides some practical ideas about how to achieve this. In the article the author states:

> In particular, more collaboration is needed, both among academic researchers and between academe and industry, to be sure important problems are being investigated using sound theories and methods. An open, collaborative model will allow the field to evolve from Marketing Scholarship 1.0 to Marketing Scholarship 2.0.
>
> *(p. 225)*

The ideas of Lutz about collaboration go some way towards resolving Day and Montgomery's challenges by addressing the critical issue of bridging theory and practice explicitly. However, the MRT theorizing process takes Marketing Scholarship 2.0 further, by considering explicitly the bridge between the theoretical and empirical domains providing a fuller empirical investigation of general theoretical structures. While academic researchers need to place a greater emphasis on following and interpreting practice they also need to consider how to lead practice with theory (Brodie 2010).

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Note

1 Pinder and Moore's (1980) book of essays *Middle Range Theory and the Study of Organizations* provides excellent guidance for addressing questions about "what is middle range theory", and "why and how does middle range theory develop". The collection of essays also provides examples of the application of middle range theorizing. These applications demonstrate how the process of middle range theorizing provides a bridge between empirical generalizations and general theories.

Further reading

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Part II

Contributions from other scientific fields

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6

Biomarketing

An emerging paradigm linking neuroscience, endocrinology, and genetics to buyer–seller behavior

Richard P. Bagozzi and Willem J.M.I. Verbeke

Economics, properly understood, is simply a branch of biology.

Thorstein Veblen, 1898, (quoted in Zak, 2004)

…brains are encased in, affected by, and dependent on the rest of the body, but our most important interactions are with other people's brains, as manifested through their bodies.

Greely (2007, p. 533)

Abstract

Human biological systems, especially as manifest in neurological, hormonal, and genetic processes, are highly responsive to and formative of buyer–seller interactions, yet the importance of this for marketing has been largely unexplored. After reviewing extant research and discussing strengths and limitations, we introduce a new perspective for thinking about buyer–seller interactions that is grounded in recent, revolutionary advances in biology.

Key words

Social neuroscience, buyer–seller interactions, hormones, genetics, empathy, theory of mind.

Introduction

In this chapter, we argue that human biology deserves greater attention in the study of buyer–seller interactions. We bring together novel, unfamiliar theories and research from biology with contemporary frameworks and findings from marketing to propose a new agenda for the study of buyer–seller interactions. Our hope is to show that research to date in marketing raises important issues for study and has done much to frame managerial questions but does not provide as comprehensive and deep a perspective as biological approaches, and in any case the former are subsumed under and explained by the latter.

Contra to Veblen quoted above, however, we do not argue that marketing, in general, or buyer–seller interactions, in particular, are branches of biology. Rather, principles from biology—particularly, neuroscience, endocrinology, and genetics—provide unique ways for representing and testing hypotheses concerning buyer–seller interactions. As foreshadowed above in the quotation by neuroscientist Greely (see also Schubert and Semin 2009), the human body, particularly the brain, constitutes the basis for buyer–seller interactions, in what has been termed, "embodied cognition," which we develop below in detail and contrast with contemporary frameworks in marketing.

Throughout our presentation, we attempt to address three questions:

- What do we know about the neurobiology of social interactions?
- What does research into the neurobiology of social interactions have to say about research into buyer–seller interactions?
- What methodological and practical implications can we identify for integrating neurobiological methods and biomarkers in marketing research and practice?

The chapter is organized as follows. First, we provide a historical overview of research into buyer–seller behavior with an aim toward building on the wealth of findings to date and pointing to needed developments and opportunities. Second, we introduce key concepts, assumptions, and findings in neurobiology, especially as they apply to social interactions. Third, we summarize emerging research done in marketing on biomarketing, and we identify directions for future research into the investigation of buyer–seller interactions.

Historical perspective on the legacy of salesforce research

Early behavioristic approaches

A surprising number of studies were conducted in the 1950s and 1960s by marketers. The dominant perspective was an S-R, stimulus-response, one (e.g., Baier and Dugan 1957; French 1960). Motivated by such problems as turnover, which in some industries was as high as 50% in the first year of employment and 80% after three years (e.g., Mayer and Greenberg 1964), researchers searched for predictors of sales success. Thus personal background characteristics (e.g., Baehr and Williams 1968; Mosel 1952), traits (e.g., Miner 1962), and abilities (e.g., Mayer and Greenberg 1964) came to be central determinants of performance for study.

Reflecting the philosophical and scientific paradigms of the time (e.g., Hull 1943; Spence 1948), the mind of the salesperson was seen as a black box in the sense that it was assumed that psychological processes were unknowable and one should therefore focus on measurable causes or stimuli influencing actual behavior, and ultimately sales outcomes. McMurry (1961, p. 113) characteristically called for investigating "what selling really is and how its effectiveness can be enhanced" but viewed psychological processes as "mysteries".

The focus on observable criteria and avoidance of psychological variables can be seen, for example, in the study done by Baier and Dugan (1957). Here a composite measure of actual job performance of insurance salespeople was found to be correlated significantly with the amount of life insurance owned (assumed to be an indicator of "belief in the product", a type of behavioral commitment; $r = .30$, $p < .01$), attendance at a "job fundamentals" school (presumed to reflect a kind of revealed motivation; $r = .11$, $p < .05$), and an objective measure of product knowledge ($r = .12$, $p < .05$).

A weakness of behavioristic or S-R approaches is that they do not specify mechanisms accounting for how stimuli produce the responses they purportedly do. This is not only a limitation in the sense of failing to explain how stimuli generate effects, but it makes it difficult to predict how managerial policies will function and to diagnose failures in this regard. Empirical research in this period produced low levels of explained variance.

A turn to psychology

The 1970s saw a spate of research embracing psychological processes. The approach taken at the time can be considered a precursor to the so-called cognitive revolution (e.g., Miller 2003) that is best exemplified in the work of Bart Weitz and colleagues, which we will discuss in the next section of this paper. That is, work in the 1970s tended to follow an S-O-R, stimulus-organism-response, perspective, wherein something peculiar to people in interactions was hypothesized to functionally mediate responses to stimuli.

A number of researchers focused on personality characteristics of salespeople (e.g., Howells 1968; Lamont and Lundstrom 1977; Mattheiss et al. 1977; Pruden and Peterson 1971). One assumption in this research is that certain traits facilitate responses to, and influence, buyers. For example, Lamont and Lundstrom (1977) examined 5 personality variables and found that only social recognition (the desire to be held in high esteem) related to territory management and overall management skills as appraised by managers.

Busch and Wilson (1976) studied the effects of expert and referent social power on customer's trust in salespersons and on attitude formation and intentions. Expert power (perceived salesperson excellence in education, experience, training, reaching sales quotas, ability to communicate, and knowledgeability) was found to be more important in generating trust in the salesperson than referent power (similarity in attitudes to the salesperson and perceived attraction to the salesperson), although both had positive effects (yielding 20.7% versus 6.4 % explained variance). Both expert and referent power affected the range of influence of the salesperson's advice on the customer in terms of a number of everyday professional behaviors. This is a noteworthy study for its construction of salesperson characteristics as stimuli and the inclusion of customer responses (e.g., trust, influence) that serve as mediators affecting behavioral outcomes.

The first relatively detailed studies of buyer–seller interactions occurred in this time period as well. In a descriptive study, Olshavsky (1973) investigated customer-seller interactions for refrigerators and color televisions, where three stages of transactions were scrutinized: orientation (where the salesperson uncovers the customer's desires), evaluation (specific features of brands are appraised), and consummation (such nonproduct attributes as financing, delivery, trade-in, store image, service, and return policy are considered, and a decision to purchase is made or not). The findings showed that the orientation phase entailed little back and forth questions and responses by either customer or salesperson, with mention of the brand as the most frequently desired attribute revealed by customers. The evaluation phase, by contrast, exhibited the largest transaction time and included a large number of incidences of discussion of special features, size, price, product construction details, and brand information. Here the salesperson initiated more content in the transaction than customer. During the consummation phase, more questions/responses occurred for the television than refrigerator, although the overall number of transaction references to product, brand, etc. were small for both, in comparison to the evaluation phase. This study is notable for its attempt to identify dynamics in sales encounters and its identification of both stages in sales conversations and some of the content in transactions that transpires in an ebb and flow manner. Davis and Silk (1972) also provided a review of salesforce research dealing

with buyer–seller interactions and add excellent managerial commentary linking work on interpersonal attraction and social influence to practical issues.

Near the end of the decade, Spiro and Perreault (1979) also conducted an important descriptive study of the use of influence tactics by salespeople. These researchers found that salespersons confronted with obstacles in selling (e.g., undifferentiated products, problems with product availability, and poor personal relationships) tended to use closed influence strategies (i.e., ingratiation and impression management), whereas those not confronted with similar obstacles tended to use open influence strategies (i.e., referent, expert, and legitimate power). By contrast, salespersons faced with highly involving buyer–seller relationships (e.g., reflecting disproportionately numbers of important customer decisions, information seeking exchanges, planning effort, and competition) tended also to use closed influence strategies, whereas those engaged in less involving buyer–seller relationships tend to engage in more open influence strategies. Despite the disparate contrasts in use of influence tactics noted above, a good number of salespersons (48.7%) seemed to be less sensitive to obstacles and involvement demands and to score on average on the use of the aforementioned influence tactics. This was an early study to suggest the importance of the need to investigate person-situation interactions in the sense that different contexts require different selling tactics.

The last study to mention in the S-O-R paradigm during this period is one done by Bagozzi (1978), where performance and job satisfaction were shown to be functions of individual difference (self-esteem, other-directedness, verbal intelligence), interpersonal (role conflict, role ambiguity), and situational (sales potential, workload) variables. The possibility of simultaneity or reciprocal causation between performance and satisfaction was also studied (Bagozzi 1980), where it was found that performance influences satisfaction, but the reverse was not supported, at least in the short run.

A number of other studies in the S-O-R tradition were conducted in the 1970s. For example, the importance of motivation with respect to performance was investigated (Walker, Churchill, and Ford 1977), and the degree of correspondence or matching between salesperson and job requirements (e.g., Greenberg and Greenberg 1980) and between salesperson and customer (e.g., Churchill, Collins, and Strang 1975) were considered.

Research into buyer–seller interactions by use of the S-O-R paradigm did much to push the field deeper into the psychology of selling. But this research was rather fragmented, lacked a coherent conceptual base, and failed to exhibit a sustained program of research.

The cognitive revolution in buyer–seller research

Near the zenith of behavioristic research in psychology, which influenced marketing research not only in personal selling as summarized above but also in consumer research up to the 1960s, philosophers, psychologists, and other social scientists began to plant the seeds for change. Early impetus for thinking about behavior anew sprang from Chomsky's (1959) critique of operant conditioning, in general, and Skinner's (1957) behaviorism in particular, as applied to language and verbal behavior, and from Neisser's (1967) ideas on cognitive processes, Bruner's (1956) insights on thinking, and work by George Miller, George Mandler, and others.[1]

The first fruits of the cognitive revolution in the study of buyer–seller interactions can best be seen in two articles by Weitz (1978, 1981). Weitz pioneered the approach to the study of buyer–seller interactions based on the salesperson's abilities to (a) appraise the customer's needs and decision making and (b) formulate strategies taken from the distinction between declarative and procedural memory. Both processes affected such performance indicators as overall sales and sales as a percent of quota in a study of salespeople selling oscilloscopes (Weitz 1978).

The theory was then developed in more depth and generality, and expressed in a contingency framework (Weitz 1981). Four factors were proposed as determinants of selling effectiveness: selling behaviors (adapting to customers, establishing influence bases, selecting influence tactics, controlling the sales interaction), resources of salesperson (product/customer knowledge, analytical/interpersonal skills, availability of alternatives), characteristics of salesperson-customer relationship (level of conflict/bargaining, relative power, quality of relationship, anticipation of future interaction), and characteristics of the buying task (needs/beliefs, knowledge of alternatives, task attributes). The main hypothesis was that the effectiveness of what salespeople do in terms of selling behaviors is moderated by the aforementioned resources of the salesperson and the characteristics of both the salesperson-customer relationship and the customer's buying task.

Two striking aspects of Weitz's (1978, 1981) early contributions are the following. First, Weitz proposed a perspective that looked at the buyer–seller interaction. This perspective incorporated buyer variables with seller variables, as interpreted through the eyes of the seller so to speak. Previous research either neglected the buyer and focused on the seller alone or else examined associations or similarities of buyers and sellers based on their characteristics, not on psychological processes. Second, Weitz grounded his approach in terms of cognitive responses. He examined the salesperson's appraisals of customer decision processes, capability to consciously adapt one's behavior to the interaction with the customer, ability to use influence and formulate strategies, and skill in shaping the course of sales conversations. Each of these cognitive responses was or could be formulated in terms of information processing principles and therefore constitutes exemplars of the cognitive revolution.

Saxe and Weitz (1982) then pointed out the important distinction between a customer orientation (CO) and a sales orientation (SO). The former was defined as helping customers assess their needs and make decisions and using tactics to facilitate such objectives, whereas the latter was conceived as trying to make a sale by use of high pressure or deceptive tactics and under conditions where the customer may not even need the product. Saxe and Weitz (1982) developed a 24-item scale to measure CO and showed that it is correlated with the abilities of salespersons to help customers and the quality of the customer-salesperson relationship. Further research on the scale, including formulation of shorter versions, can be found in Periatt, LeMay, and Chakrabarty (2004) and Thomas, Soutar, and Ryan (2001). The CO scale might be conceived as measuring a cognitive ability or style that reflects how adaptive salespeople are. For neuroscience and genetic perspective on CO and SO see Bagozzi et al. (2012) and below.

Weitz's (1981) contingency framework was further refined in Weitz, Sujan, and Sujan (1986), where selling was conceived in adaptive terms. That is, adaptive selling was defined as "the altering of sales behaviors during a customer interaction or across customer interactions based on perceived information about the selling situation" (Weitz et al. 1986, p. 175). Spiro and Weitz (1990) deepened the concept of adaptive selling and considered it to be a predisposition consisting of such facets as recognition that different selling approaches are needed in different situations, confidence that one can use a variety of approaches and alter them as needed, the ability to gather information of different sales situations and use appropriate sales strategies tailored to them. Spiro and Weitz (1990) then developed a 16-item scale to measure adaptive selling and found two dimensions. Administration of the scale to a sample of 268 salespeople revealed that adaptive selling was significantly, positively associated with androgyny (self-perceptions that one is both assertive and yielding, instrumental and expressive, $r = .45$), putting oneself in the place of others ($r = .34$), showing empathetic concern for others ($r = .21$), social self-confidence ($r = .36$), capability of opening up or eliciting intimate information from others ($r = .45$), intrinsic motivation ($r = .26$), personal efficacy ($r = .35$), and interpersonal control

(r = .42). Moreover, adaptive selling related positively with self-reported performance (r = .26) but not with manager assessed performance (r = .03).

The next development in Weitz's cognitive response program of research concerned a model of learning, goal orientation, and behavior, where the general predicted sequence of effects was supervisory feedback→goal orientation→behavior→performance (Sujan, Weitz, and Kumar 1994). More specifically, 190 salespersons from companies across a variety of industries were studied where it was found that (a) positive feedback from supervisors stimulated a learning orientation (improving abilities and skills), while negative feedback also induced a learning orientation and a performance orientation (demonstrating abilities and skills), (b) the learning orientation led to working smarter (better engagement in planning, confidence/capability in engaging in a wide range of sales behaviors, and flexibility in performing these behaviors) and working harder (persisting in job-related behaviors), where the latter only occurred for those salespersons low in self-efficacy, (c) the performance orientation led to working hard, but only for those high in self-efficacy, and (d) both working smart and working hard influences performance (a self-evaluation relative to other salespeople in the company). This study identifies a number of cognitive responses governing the salesperson's relationship with both his/her supervisor and customer, and shaping performance.

The last study in Weitz's series of contributions considers relationship marketing issues in buyer–seller interactions. Weitz and Bradford (1999) discuss how the practice of personal selling and sales management has changed as a consequence of the need for and evolution of long-term buyer–seller relationships in many business contexts. For example, over time the roles of salespersons have shifted from provider, to persuader, to problem solver, to value creator. Weitz and Bradford stress the importance of conflict management in long-term relationships, where they elaborate on five approaches: avoidance, accommodation, confrontation, compromise, and collaboration. Each of the five approaches was qualitatively assessed in terms of specific characteristics associated with information exchange and the signaling of commitment. Avoidance ranked the lowest on the characteristics, collaboration the highest, with the others generally somewhere in between. At the same time, Weitz and Bradford stress that the effectiveness of the 5 conflict management approaches depends on contingencies provided by two moderators: the importance of an issue to the seller and the level of commitment to the relationship. Weitz and Bradford considered when the moderators lead to positive, negative, or neutral effects of conflict management approaches on relationship quality, but it is beyond the scope of this paper to discuss these here. The authors end their article with a discussion of the role of teams; knowledge, skills, and abilities; compensation and promotion; and performance assessment in the management of salespeople. Throughout the discussion, cognitive response principles tie the topics back to the contingency model of buyer–seller interactions proposed earlier by Weitz (1978, 1981).

Figure 6.1, panel A, summarizes the cognitive response paradigm as manifest in salesforce research. The stimuli and conditions constraining and facilitating salesperson cognitive responses are shown at the left and termed "the context of buyer–seller interaction". These include organizational goals and practices, social context variables (e.g., status, reputation, roles, power), cultural elements (e.g., conventions, laws), interpersonal factors (e.g., media of communication used by salesperson and buyer; interpersonal conflict and attraction), and intrapersonal characteristics (e.g., identification with company, sales call anxiety, motivation, pridefulness). Salespersons, through cognitive responses, then interpret and react to the contextual stimuli and conditions, and this then results in specific actions of salespersons. For example, key cognitive responses include appraisals of customer decision criteria and processes, salesperson customer versus sales orientation, adaptive resource utilization, empathy, personal efficacy, intrinsic

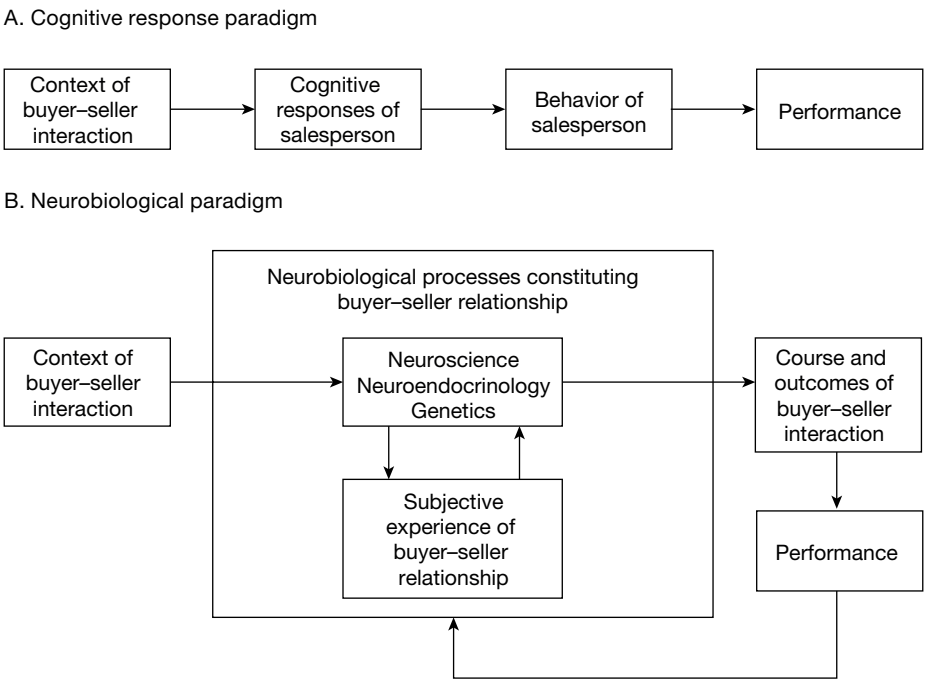

Figure 6.1 The cognitive response paradigm in salesforce research and a neurobiological reformulation

motivation, and social confidence; important actions reside in strategy implementation, flexibility and persistence in tactical adjustment, and conflict resolution and team selling. Performance is then a consequence of actions taken by the salesperson (subject to such contingencies as salesperson self-efficacy, competition, and other situational moderators).

The cognitive response paradigm has obviously contributed much knowledge about how salespeople and buyer–seller relations function and has given us many managerial policies. However, it has only begun to consider the neglected topics of goal-directed action (e.g., Brown, Cron, and Slocum 1997), process dynamics (e.g., Ma and Dubé 2011), emotions (e.g., Bagozzi, Verbeke, and Gavino 2003; Bagozzi, Belschak, and Verbeke 2010; Belschak, Verbeke, and Bagozzi 2006; Verbeke and Bagozzi 2000, 2003; Verbeke, Belschak, and Bagozzi 2004), and empathy and CO (Homburg, Wieseke, and Bornemann 2009). Importantly, a limitation of the cognitive response paradigm as conducted in the salesforce area to date is the inattention to embodied perspectives. Customer-salesperson interactions, especially under face-to-face encounters, entail numerous, on-going communications where the eyes, gestures, etc. convey information as to the motives, values, goals, sentiments, and intentions of buyer and seller.

Embodiment occurs in two ways. Psychological embodiment happens when our bodily actions or our perceptions of body movements or actions of others (e.g., Chen and Bargh 1999; Markman and Brendl 2005) and comportments (e.g., Seibt et al. 2008) induce us to respond in specific affective and cognitive ways. Cohen and Leung (2009) discuss how these affective and cognitive responses, in turn, shape complex mental representations and judgments (e.g., complex ideas, norms, rules). Beyond psychological embodiment, one can identify what we term here "biological embodiment." Here psychological responses, including affective and cognitive reactions and complex mental representations, are rooted in sensory mechanisms and motor

control areas of the brain, and possibly in other brain mental processes (e.g., memory, emotion, executive control). See for example, Adolphs (2009), Oullier and Basso (2010), Schubert and Semin (2009), Barsalou (2008), and Semin and Smith (2008). The embodied perspective has been termed "modal" to contrast with the cognitive response paradigm which is amodal in the sense of not taking into account the fundamental biology of psychological and social behavior.

The approach we take hereafter is a neurobiological one which builds upon the emerging embodied perspective. In developing this approach, we enlarge on and make linkages to salesforce research, especially that conducted in the cognitive response tradition. Figure 6.1 (panel B) presents a sketch of the ideas, focus of research findings, and directions for future research we will develop in the final two sections of the paper. Notice in Figure 6.1 (panel B) that stimuli and conditions in the context of the buyer–seller interaction again serve as information to be interpreted and responded to, as under the cognitive response paradigm. But the central processes are not limited to cognitive responses but rather are neurobiological processes. One category of neurobiological processes refers to the actual physical activity in the brain representing mental and motor processes. They reflect neurological, hormonal, and genetic phenomena. The second category of neurobiological processes is shown as subjective experiences of buyers and sellers in a buyer–seller interaction. They supervene, we submit, on the neural, hormonal, and genetic processes. The subjective experiences also include emergent phenomena which feedback to initiate and guide brain functions. These subjective experiences occur either automatically or consciously and constitute the implicit and explicit phenomenology of the sales interaction. As we develop below, embodiment occurs through subjective experiences and neurobiological processes, and the dynamics influence the course and outcomes of the buyer–seller transaction.

Neurobiology and buyer–seller interactions

Overall, within neurobiology we take a social neuroscience perspective, which Cacioppo and Decety (2011, p. 163) define as one that "seeks to specify the neural, hormonal, cellular, and genetic mechanisms underlying social behavior, and in so doing to understand the associations and influences between social and biological levels of organization". In this section of the chapter, we elaborate on the buyer–seller interaction framework sketched in Figure 1 (panel B). In the final section, we specify neural, hormonal, and genetic mechanisms undergirding the elaborated framework, and further present new research done in this regard in marketing.

Figure 6.2 summarizes our adaptation of the neurobiological paradigm discussed above, where we provide more detail underlying buyer–seller interactions. Our approach builds upon the co-regulation model of social cognition recently proposed by Semin and Cacioppo (2009, Figure 1, p. 113), but goes beyond it in certain ways developed below. The objective is to outline the processes behind intersubjectivity between buyers and sellers so as to provide a foundation for the neural, hormonal, and genetic principles introduced in the next section.

At the left of Figure 6.2, we see that the context of buyer–seller interactions resides in the goals of the seller organization and the goals of the buyer organization. Of course, the organizational goals are both constrained and facilitated by the larger social situation in which they are embedded, which includes legal, ethical, economic, political, and environmental requisites and exigencies, among others (not shown in Figure 6.2). Nevertheless, the proximal goals of the buyer and seller organizations shape the interaction between buyer and seller, and it is on these that we begin our discussion of co-regulation between buyer and seller. Here organizational goals are construed broadly to encompass (a) specific guidelines and objectives in each employee's job description, (b) particular task-related aims given to salespersons and buyers by supervisors, and (c) general regulations and informal rules and procedures governing the

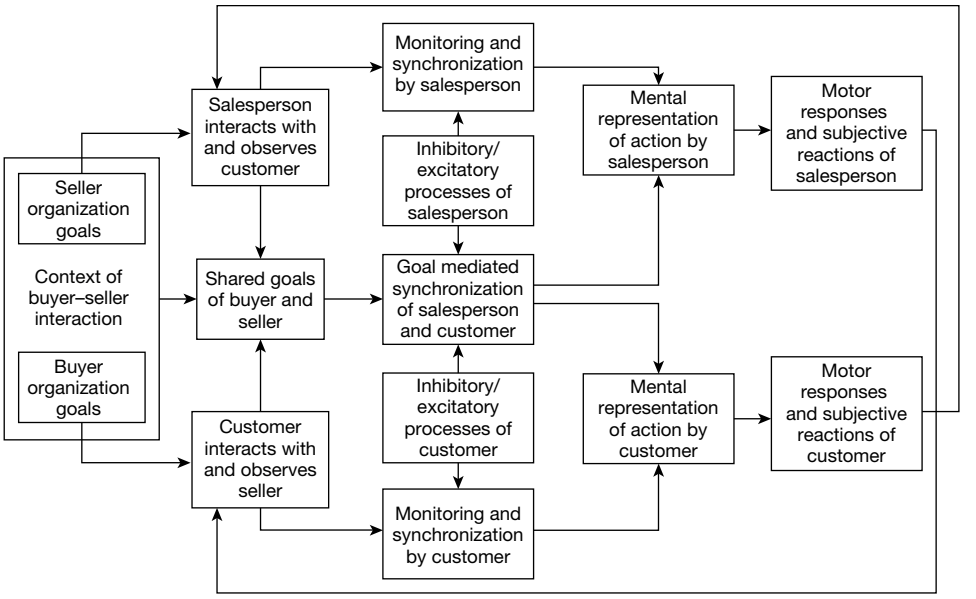

Figure 6.2 A neuroscience model of the buyer–seller interaction

behavior of buyers and sellers. Organizational goals in these senses are what buyers and sellers bring to their encounters and which function throughout interactions to compel and promote each party to take into account the context defining their transactions. Salespersons and customers are also shaped by organization-based affect which reside in actions and demeanor of supervisors as well as in organization policies (e.g., Sguera, Bagozzi, Huy, Boss, and Boss 2013).

Buyers and sellers thus begin their interactions with organizational goals in mind and mutually construct shared goals as they interact with each other and observe and interpret each other's actions and reactions (see Figure 6.2). Personal goals and values disrupt or advance the course of the interaction too. Throughout the interaction process, buyer and seller monitor their own and each other's actions and reactions and create what Gallese (2001) calls, a "shared manifold", which is a kind of meaningful interpersonal space jointly appropriated by persons interacting with each other. The shared manifold likely includes, beyond shared or mutually constructed goals, common understandings and joint emotions. Much of shared cognitions, volitions, and emotions happens in what Gallese (2005) terms "an embodied simulation mechanism", which is located largely in the mirror neuron system (MNS, see below). Oberman and Ramachandran (2007, p. 310) propose a similar account of simulation rooted in the MNS. Gallese (2005, p. 23) summarizes this intersubjectivity process as follows:

> The same neural structures involved in the unconscious modeling of our acting body in space also contribute to our awareness of the lived body and of the objects that the world contains. Neuroscientific research also shows that these are neural mechanisms mediating between the multi-level personal experience we entertain of our lived body, and the implicit certainties we simultaneously hold about others. Such personal and body-related experiential knowledge enables us to understand the actions performed by others, and to directly decode the emotions and sensations they experience. A common functional mechanism is at the basis of both body awareness and basic forms of social understanding: embodied simulation.

Embodied simulation entails brain processes involved in (a) imitating another person with whom one interacts (which occurs in the ventral premotor cortex, posterior parietal cortex, and posterior region of the superior temporal sulcus, Gallese 2003, p. 523), (b) responding in an empathetic way to others (which happens in the amygdala, insula, anterior cingulated cortex, and orbitofrontal cortex and involves the autonomic nervous system, hypothalamic-pituitary-adrenal axis, and certain hormone systems, Decety 2011a), and (c) mental imagery and action understanding systems related to theory of mind or interpersonal mentalizing (which occur in the medial prefrontal cortex, temporal poles, temporo parietal junction, and precuneus regions, among others, Gallese 2005; Gobbini et al. 2007).

Building on Semin and Cacioppo (2009), we extend Gallese's shared manifold approach to incorporate interpersonal processes more formally, in our case customer-seller interactions:

> Gallese's model of social cognition is informed by a research paradigm involving a passive observer rather than two agents in a *continuously unfolding dynamic* monitoring process of co-regulation. That is, the unit of analysis is the individual…the "shared manifold" alone does not shape unfolding interaction.
>
> *(Semin and Cacioppo 2009, p. 112, emphasis in original)*

Beyond observing, sensing, and monitoring the behavior and reactions of self and other, customer and salesperson coordinate their actions and reactions in a process termed "synchronization" (Figure 6.2). Semin and Cacioppo (2009, p. 113) define synchronization as "jointly and simultaneously recruited sensory motor processes that are evident in a neurophysiological mirroring of the producer by the perceiver". Notice in Figure 6.2 that customer and salesperson both monitor and synchronize their own actions and responses, and these processes separately influence mental representations of customer and salesperson, along with other determinants mentioned below. Synchronization and monitoring processes are automatic biological operations.

At the same time, Figure 6.2 shows that shared goals, and other mental processes held in common, influence goal mediated processes, which are "higher-level decision processes". Joint goal mediated synchronization involves both automatic and controlled processes (e.g., executive processes), which along with the monitoring and synchronization done uniquely by customer and salesperson, influence distinct mental representations of action by customer and salesperson. Unlike Semin and Cacioppo (2009) who limit goal mediated synchronization to separate representations by interacting partners, we propose that shared goals contribute to a certain degree of mutual goal mediated synchronization by customer and salesperson together.

Figure 6.2 also shows the regulatory influence of inhibitory/excitatory processes, which can function as main effects or moderating variables, governing both the individual monitoring and synchronization by customer and salesperson, as well as their shared goal mediated synchronization. By inhibitory/excitatory processes we mean the effects of hormones and genes on the operation and functioning of synaptic transmission in the brain, either via regulation of ion channels or modulation. More on this will be said in the next major section of the chapter.

The final processes shown in Figure 6.2 are the actual motor responses and subjective reactions of customers and salespersons as they interact with each other in a goal-directed context. The motor responses constitute the actions the actors undertake. The subjective reactions are the interpretive, sense-making processes customers and salespersons undergo. The latter capture the phenomenology of customer and salesperson and their commonly experienced interaction as it relates to their relationship, task, and outcomes. These subjective reactions function in emergent (mental) processes and can, through a type of downward causation, influence lower-level physiological processes in the brain. Of course, such emergent phenomena

are themselves physically manifest in the brain. In addition, subjective reactions have aspects of consciousness indicative of what some neuroscientists and philosophers term, qualia, and of awareness of causal agency as well.

The processes depicted in Figure 6.2 do not "end" with motor responses and subjective reactions of customers and salespersons. Rather a type of co-regulation continues when, as shown in Figure 6.2, responses and reactions of customer become input to salesperson, and vice versa. This makes the neuroscience model more explicitly a social level representation.

Neural, hormonal, and genetic mechanisms underlying buyer–seller interactions

Marketing practitioners and scholars are perhaps most interested in buyer–seller interactions for the managerial implications of such interactions. For example, sales trainers and supervisors might focus on the ability of individual salespersons to recognize opportunities in their sales territories and their skill in building relationships with customers in those territories. Or a vice-president of sales might be most concerned with the bottom-line performance (e.g., actual sales) that buyer–seller interactions are thought in some way to map into.

Over the years, marketing scholars have devoted special effort to making sense of buyer–seller interactions so as to better predict and attain managerial outcomes such as sales, profitability, or market share. But the notion of a buyer–seller interaction has proven to be so complex that to explain outcomes at the managerial level by study of the social level (e.g., the customer-salesperson interaction) has required theory-driven research. So as sketched above, researchers have turned especially to the psychological level and drawn upon theories from the S-R, S-O-R, and cognitive responses paradigms. Thus from one point of view, one level of analysis, the managerial, has been studied from another more micro level, the psychological, with the social level (e.g., the buyer–seller interaction) used as a loose bridge between the two.

We submit that this three-level approach in marketing, as successful as it has been, has reached its nadir, or at least is near a point of diminishing returns, and the need exists for a multilevel approach ingrained in social neuroscience where neural, hormonal, and genetic principles and processes are used to ground psychological, social, and managerial levels of analysis.[2] Our model of buyer–seller interaction in Figure 6.2 is a sketch of a social level perspective established in the neuroscience level. We wish in this section of the chapter to (a) link the model in Figure 6.2 to the managerial level and (b) break down the concepts and processes implied in Figure 6.2 into component processes at the neural, hormonal, and genetic levels. To do this, we use such psychological concepts as empathy and theory of mind and relate them to neural, hormonal, and genetic mechanisms. Some research in marketing already exists in this regard, which we use to illustrate the central ideas involved and the possibilities implied.

Before discussing these issues, we desire to point out principles that ground the study of social neuroscience when behaviors across levels of organization are investigated (e.g., Cacioppo and Berntson 1992; Cacioppo and Decety 2009). The principle of multiple determinism maintains that any behavior at one level of organization can have multiple antecedents within or across levels of organization. This implies also that any behavioral phenomenon at one level of organization can function to explain another variable at the same level or across levels. The principle of non-additive determinism claims that the whole is not necessarily predicted by the simple sum of its parts. For example, a physiological response may not be decomposable and explicated by specification of other physiological processes by themselves, but only in conjunction with differences in behavior at the social level (see Cacioppo and Berntson 1992, p. 1024, for an example). The principle of reciprocal determinism asserts that mutual influence can occur

between biological and social variables to determine behavior. This typically occurs recursively, rather than simultaneously, such as might happen when social variables influence psychological variables through their effects on neural, hormonal, and/or genetic variables.

Three key neural mechanisms

Empathy Bagozzi et al. (2012) asked, what is it about the customer orientation of salespersons (a psychological level variable, see Saxe and Weitz 1982) that accounts for its influence on opportunity recognition in the marketplace (a managerial level variable)? The answer was empathy, but not as classically conceived psychologically, rather empathy was decomposed in terms of its neural components. Bagozzi et al. (2012) used a short version of Saxe and Weitz's (1982) SOCO scale to show that CO, but not SO, influences opportunity recognition in the field. Opportunity recognition was conceived and measured in three domains: motivation to learn from customers, knowledge formation of the buying center, and contextual knowledge formation of the customer firm, industry, and economy. In a lab experiment by use of functional magnetic resonance imaging, Bagozzi et al. (2012) then showed that degree of CO by real salespersons was rooted in the extent of activation of regions in the brain underpinning empathy. Here the neuroscience level was used to explain and ground the psychological.

Why not simply use psychological concepts and measures of empathy to explain CO? First, from a measurement theory perspective, relying on only one method potentially introduces common method biases. By doing two studies, where customer orientation is represented at the psychological level and is common to both studies, and examining hypotheses in one study between the psychological and managerial levels in a field investigation, plus scrutinizing hypotheses between the psychological and neuroscience levels in an experimental study, we varied both different levels of analysis and different methods. This reduces the threat to validity from common method biases.

Second, by grounding customer orientation, a psychological construct, in neuroscience processes, we (Bagozzi et al. 2012) bridged the subjective and phenomenological levels of description with neural underpinnings. That is, such an approach provides a way of decomposing psychological phenomena into "component structures, representations, and processes" and "permits fine-grain analyses of brain-behavior associations" (Cacioppo and Decety 2011, p. 169; see also the nonunitary view, Camerer, Loewenstein, and Prelec 2005). This can deepen our understanding, explanation, prediction, and control of marketing behavior and practices.

Third, the breaking down of psychological processes underlying buyer–seller interactions into social neuroscience components can lead to new insights and modification of longstanding psychological constructs and their implications. A case in point is the role of empathy in buyer–seller interactions. Classically, in psychology empathy has been conceived as consisting of three components: (1) an emotional reaction of caring that might include sharing another person's feelings, especially when the other is in pain or suffers, (2) a cognitive capacity to take the perspective of another person, to put oneself in the shoes of another so to speak, and (3) a monitoring mechanism that registers the source of the experienced affect in a way that differentiates self from the other and avoids psychological distress as a result of observing the pain or suffering of the other (e.g., Eisenberg 2000). The claim is that all three components must be present for empathy to occur. In other words, empathy is defined by the sharing of emotions, perspective taking, and the avoidance of psychological distress.

A social neuroscience perspective on empathy (e.g., Decety 2011a, b) identifies a number of neurobiological systems and brain regions implicated in empathy: the cortex (insula, anterior cingulated cortex, and orbitofrontal cortex), midbrain (periaqueductal gray), and brainstem,

among other processes. Bagozzi et al. (2012) demonstrated by use of fMRI techniques that many of these brain regions are indeed activated to a greater extent in salespeople who score high versus low in CO and for salespersons who react more versus less strongly to facial expressions of emotions, especially negative emotions.

Thus Bagozzi et al. (2012) and Schraa-Tam et al. (2012) linked psychological reactions believed to be aspects of empathy to neurological activation demonstrated in the neuroscience literature to express the components of empathy. But the additional power of social neuroscience to unlock new processes across levels of analysis, and thereby challenge longstanding conceptualizations of empathy in the psychology literature, can be seen in a study by Bagozzi, Verbeke, van den Berg, Rietdijk, Dietvorst, and Belschak (2013). Here it was found that salespersons higher versus lower in Machiavellianism are less able to take the perspective of others (as reflected in differential activation of the precuneus region) and to read the minds of others (shown in differential activations of the medial prefrontal cortex and temporo-parietal junctions), yet are more able to resonate automatically to facial expressions of emotions in others (revealed in differential activation of the insula and pars opercularis). These findings bring into question the received view in psychology that empathy is a unitary process marked by the coherence of shared emotions, perspective taking, and self–other differentiation. Rather it appears that, under some conditions or for certain persons, a dissociation can occur between emotional resonance and perspective taking. This has managerial as well as behavioral theory implications for selecting, training, coaching, assigning, and in general managing salespersons (see Bagozzi, Verbeke, Rietdijk et al. 2013). Empathy clearly is a process of central interest to marketers and requires a multilevel, social neuroscience perspective to understand and harness its implications.

Theory of mind Dietvorst et al. (2009) asked what it is about the interpersonal skills of salespersons (psychological level variables) that accounts for their influence on sales performance (a managerial level variable). A key phenomenon underlying interpersonal skills is interpersonal mentalizing or what has come to be known as theory of mind processes. These refer to activities involved in inferring another person's beliefs, attitudes, desires, intentions, and other mental events or states (Frith and Frith 2003; Singer and Fehr 2005). Theory of mind processes are largely automatic and reflexive, and reside in multiple areas of the brain.

To capture theory of mind processes at the psychological level as they relate to interpersonal selling skills, Dietvorst et al. (2009) developed self-report measures of 4 specific skills: building rapport with customers, detecting nonverbal cues, taking a bird's eye view and communicating the larger picture as well as detailed information, and shaping the course and outcome of transactions. The measures were administered to salespersons in 4 different studies, and classic confirmatory factor analyses and structural equation models were used to establish convergent, discriminant, criterion-related, predictive, and nomological validities.

The measures were then used in an experimental context with real salespersons to link the psychological measures of interpersonal skills, which concern theory of mind capabilities, to component processes at the neural level of analysis. Specifically, Dietvorst et al. (2009) asked real salespersons to engage in experimental conditions for interpersonal mentalizing and control conditions, where two main findings are of note. First, 3 of 4 regions found in the neuroscience literature were shown to be activated in theory of mind processing: the medial prefrontal cortex, temporo-parietal junctions, and precuneus, but not temporal poles, regions. Second, self-report measures of interpersonal mentalizing were found to correlate positively with the intensity of activation of the aforementioned brain regions. In short, psychological representations of theory of mind processes were grounded in neural processing mechanisms. Dietvorst et al. (2009) considered managerial policies for enhancing interpersonal mentalizing as well.

Pleasure, pain, and emotion circuits A third major neural mechanism of relevance to buyer–seller interaction is that governing pleasure and pain and their relationship to emotions. Actually pleasure and pain processes engage largely distinct brain regions (e.g., Lieberman and Eisenberger 2009). For example, the pleasure circuit includes the prefrontal cortex (especially the ventromedial prefrontal cortex and orbitofrontal cortex), hippocampus, ventral striatum, nucleus accumbens, hypothalamus, amygdala, and ventral tegmental area (e.g., Kringelbach and Berridge 2009). Dopamine from the ventral tegmental area to the brain regions mentioned above plays a key role in regulating pleasure. No research on the role of pleasure in buyer–seller interactions has been done to our knowledge in marketing. But we speculate that pleasure functions to initiate and maintain motivation and action. Salespersons likely learn how, where, when, and how hard to apply their efforts through acquired knowledge and skills associated with the pleasure circuit. Indeed, good and bad selling habits can conceivably become addictive or at least functional or dysfunctional, respectively, through learning via the pleasure circuit.

Pain is not the opposite of pleasure but also plays a role in motivation and action. The thalamus, insula, somatosensory cotex, periaqueductal gray, and dorsal anterior cingulate cortex are especially implicated in the pain circuit (Linden 2007, pp. 100–104). For buyer–seller interactions, social pain ("hurt feelings", social rejection) would seem to be a pertinent de-motivator, negatively affecting a salesperson's actions and performance (Eisenberger 2006; Eisenberger and Lieberman 2004). No research could be found to date examining such processes in buyer–seller interactions, but they represent promising agendas for the future.

Verbeke and colleagues have studied a number of emotions in salespersons: social anxiety, embarrassment, shame, and pride. This research has been limited to self-reports of emotions. We believe that self-conscious and moral emotions are very relevant to buyer–seller interactions, but these have not been studied at the biological level in marketing. An opportunity exists for grounding psychological conceptions and measurement of emotions in components from social neuroscience. With regard to self-conscious emotions (pride, guilt, shame, embarrassment, envy, jealousy) and moral emotions (gratitude, contempt, righteous anger, disgust, awe, elevation), we speculate that the following brain regions are worthy of scrutiny: amygdala, insula, nucleus accumbens, orbitofrontal cortex, cingulate cortex, dorsal/ventral medial prefrontal cortex, somatosensory cortex, temporal parietal junction, inferior parietal lobule and sulcus, and inferior frontal gyrus and frontal operculum, among other possible areas.

Summary Figure 6.3 summarizes the three key neural mechanisms that we propose underlay buyer–seller interactions. For purposes of organization, we have limited discussion here to neural processes. But it should be recognized that hormonal and genetic mechanisms are intimately connected as well to empathy, theory of mind, pain, pleasure, and emotions. We turn now to the mediating and modulating roles of hormones and genes in human behavior and how they might be of relevance to the study of buyer–seller interactions.

Four central hormones

Recently a number of researchers have investigated what they term "the endocrinology of social relationships", which attempts to elucidate "the role of hormones in mediating and supporting the formation, maintenance, and quality of social relationships" (Ellison and Gray 2009, p. 4). Based on this emerging research area at the crossroads of endocrinology and social science, we identify 4 hormones that seem particularly worthy of study, but we acknowledge that others may someday become relevant as well, as we learn more. No research to date could be found in this regard in marketing. The 4 hormones are the steroids, cortisol and testosterone, and the

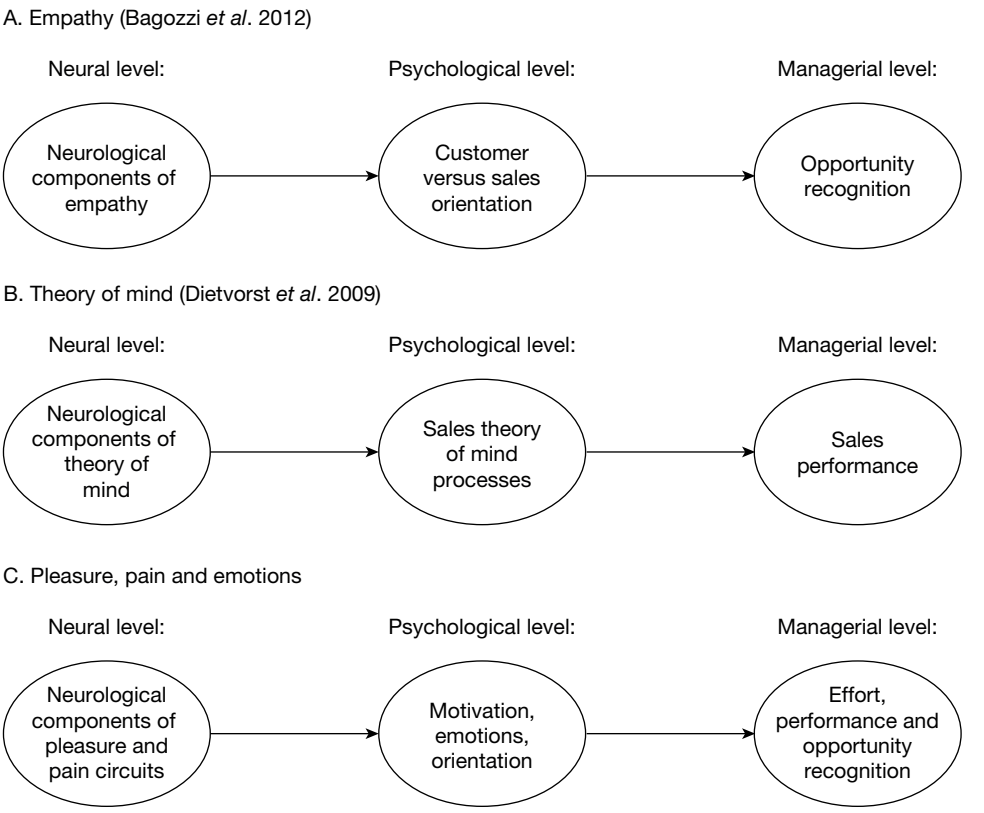

Figure 6.3 Across level explanations in buyer–seller interaction research

peptides, oxytocin and vasopressin. The hypothalamus and pituitary region of the brain play key roles in the regulation of these hormones. Cortisol production and release occurs via the hypothalamus–anterior pituitary–adrenal cortex pathways, whereas testosterone production and release happens via the hypothalamus–anterior pituitary–gonads pathway. Oxytocin and vasopressin both are produced and released via the hypothalamus–posterior pituitary pathway. The 4 hormones are important parts of neurochemical underpinnings of social behavior.

Cortisol Cortisol plays a role in one's responses to stress (e.g., de Kloet 2000). In customer–salesperson interaction, social stress can pose a problem and occurs as a result of such stressors as social rejection or negative evaluations of oneself, one's actions, or one's performance. For example, a salesperson faces negative evaluations from customers, supervisor, colleagues, and family members, when he/she performs poorly.

Bagozzi et al. (2003) showed that negative evaluations by customers of salespersons produced feelings of shame in salespersons, which in turn, influenced performance and altruistic acts conducted in relation to colleagues (see paths F and D in Figure 6.4, panel A).[3] Gruenewald, Kemeny, and Azis (2006) suggested that shame and levels of cortisol increase when social evaluative threats moderate the effects of subjective social status (see paths A, B, C1, C2, and G in Figure 6.4, panel A). We speculate also that cortisol affects performance and organizational citizenship behaviors (path E in Figure 6.4, panel A).

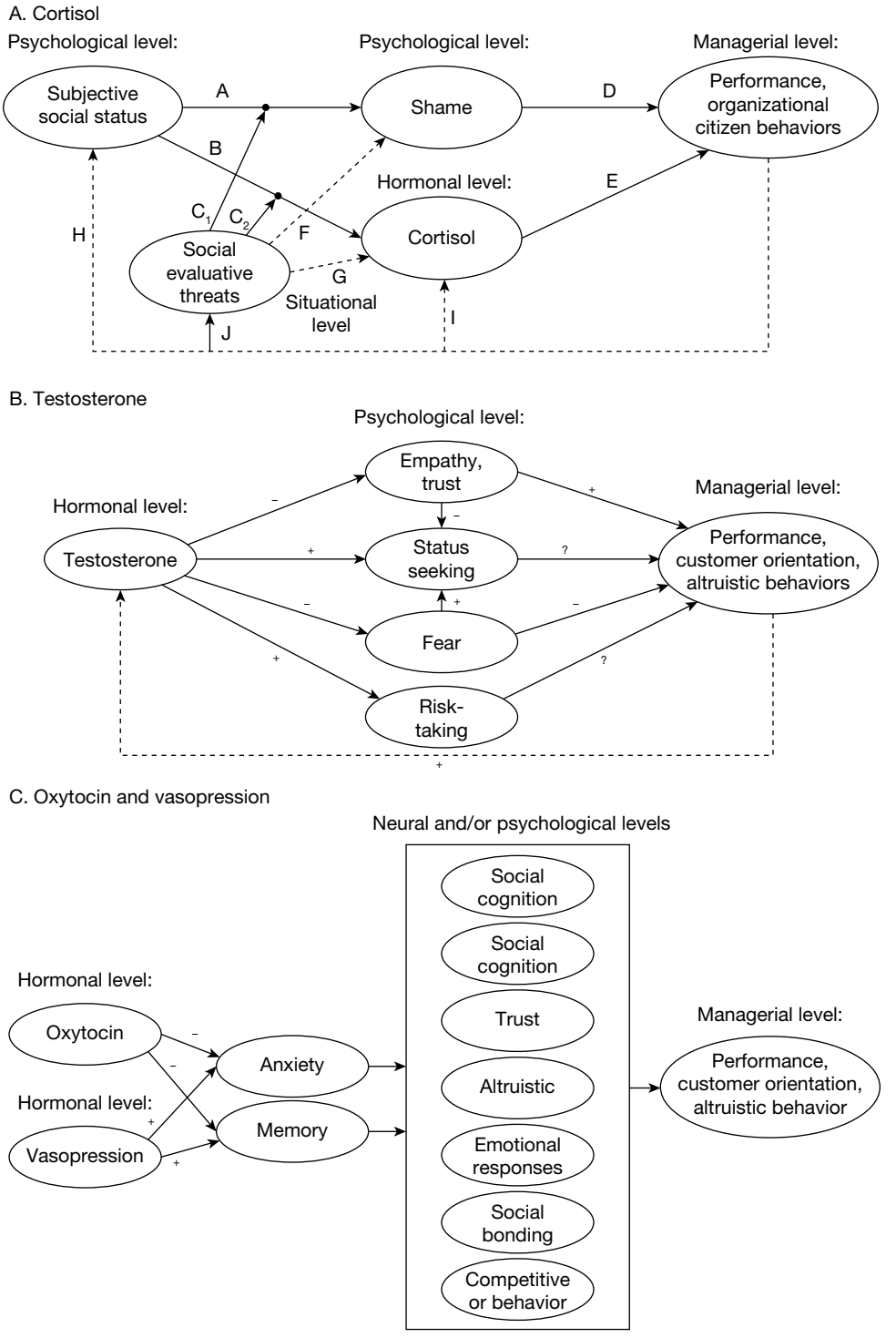

Figure 6.4 Hormonal influences in customer–salesperson interactions

How might this happen and what effects may occur? Based on research summarized in Coates, Gurnell, and Sarnyai (2010), acute (or phasic) increases in cortisol lead to risk aversion, as persons experience economic losses over time. The relationship can be curvilinear such that risk aversion may occur after an initial increase in cortisol and then decline after reaching a peak (Conrad, Lupiens, and McEwen 1999). By contrast, chronic increases of cortisol in response to stress might lead to anxiety and depression and have negative effects on performance. This points to the need of salespersons to learn to cope with stress and for management to implement changes to prevent excessive levels of stress. Cortisol is likely to respond to recurring patterns of elicitors of stress and how stress is coped with. Hence, we suspect that increases and decreases in performance over time will have feedback effects on cortisol levels, as well as on other psychological reactions upon which shame and cortisol depend (see paths H, I, and J in Figure 6.4, panel A). Other cognitive and emotional reactions are likely to depend on cortisol as well. Moreover, chronically high levels of cortisol can have health-threatening consequences and affect motivation and effort on the job. For example, body weight gain, hypertension, and depression are symptoms associated with high levels of cortisol over extended periods of time. Singh, Goolsby, and Rhoads (1994) consider the mediating role of burnout between role stressors and job outcomes of service managers.

Testosterone Testosterone has been linked to anxiety and responses to fear (van Honk, Peper, and Schutter 2005), to anticipated and post-outcome competition (Salvador 2005), to status (Mazur 2005), and to empathy and trust (van Honk et al. 2011). For financial risk taking in high trading environments, higher levels of testosterone appear to lead to greater performance than lower levels (Coates et al. 2010). In their review of the role of testosterone in social interactions, Eisenegger, Haushofer, and Fehr (2011) propose that testosterone might functionally decouple the orbital frontal cortex from the amygdala and thereby affect processing of fearful stimuli such as angry faces; or testosterone might induce status seeking through its effects on reward processing in the reward system. The latter occurs through increased dopaminergic neurotransmission in the nucleus accumbens, and leads to reward seeking and risk taking. In sum, we see that testosterone (and probably also cortisol) interacts with neural and psychological processes discussed above. These domains constitute promising areas of research into buyer–seller interactions.

Figure 6.4, panel B, summarizes our conjectures on the role of testosterone in customer–salesperson interactions. To the extent that testosterone suppresses empathy and trust, we would expect CO and discharge of altruistic behavior towards colleagues to decline. This, in turn, might negatively affect performance. On the other hand, decrements in, or blockage of, empathy and trust might subdue status seeking. Status seeking would especially be expected to be functional in terms of spurring on motivation and effort in competitive situations. To the degree that salespeople strive to outperform colleagues and competitors and see this as a route to status enhancement, testosterone might negatively impact status seeking through its effects on empathy and trust. By contrast as shown in Figure 6.4, panel B, testosterone might have a direct positive effects on status seeking. The drive for dominance and achievement of high status is under the influence of high testosterone when people anticipate competitive situations (Salvador 2005).

The question of what effects status seeking has on performance, CO, and organization altruistic behavior is not easy to answer. A lot depends on the economic and social context. Salespersons are typically at a status disadvantage vis-à-vis customers and must maintain a demeanor of deference to the customer upon whom they depend. This is even stronger in group-based versus independent-based cultures. Thus salespersons must not allow their needs for status recognition to interfere with their relationships with customers. On the other hand,

channeling one's needs for status to exceed the accomplishments of peer colleagues and to win sales over the competitors can lead to increased performance. Salespersons who desire social status need to avoid bragging and displays of hubris in front of customers, yet manage expressions of pride to customers, sales managers, and colleagues, so as not to offend them and interfere with interpersonal communication. Hence we believe that the status-seeking-to-performance relationship is a contingent one, and more research is needed into the conditions regulating it.

Higher versus lower levels of testosterone tend to reduce fear or anxiety, which in turn should lead salespersons to exhibit less procrastination and avoidance, when approaching customers, especially new business, and asking for commitments. Thus testosterone should have a positive effect on performance, through its mediation by reduced fear responses. Likewise one might expect testosterone to result in status-seeking urges and efforts through the fear pathway (see Figure 6. 4, panel B).

Increases versus decreases in levels of testosterone should lead to greater risk-taking. But this might not translate into higher performance. A need exists for identification of moderators of the risk-taking-to-performance relationship so as to ascertain when risk-taking might become excessive and dysfunctional. In addition, as mentioned for the effects of cortisol above, a curvilinear relationship may be at work in certain instances such that intermediate levels of risk-taking might be especially useful for motivating salespersons to canvas for new accounts, but management must help salespersons determine the balance in effort devoted to existing and new accounts. Salespeople and managers need to consider the trade-offs amongst opportunities, over-or-under confidence, and rational versus irrational risk-taking in everyday selling tasks. An area for future research concerns differences in the effects of hormones (and genes) for salespeople working alone or working as part of a team.

A final issue to consider is the effect of cycles of performance successes and failures over time on testosterone levels (see feedback path in Figure 6.4, panel B). In this regard, Coates et al. (2010, pp. 335–336) discuss the so-called "winners effect" where a victory leads to increased testosterone, which prepares one for a subsequent opportunity, whose anticipation leads to higher levels of testosterone (termed a "challenge effect", which is thought to be a form of androgenic priming); this then increases confidence and risk-taking, with the result of yet another victory that increases testosterone, and so forth. In addition to study of acute effects of and on testosterone, chronic effects on risk-taking, especially irrational risk-taking, and on the health and welfare of salespersons deserve scrutiny.

Oxytocin Oxytocin is released during social interaction simply while in the presence of other persons or potentially more strongly when physical contact such as touching (e.g., handshaking) occurs. Common destinations of oxytocin, which is both a hormone and a neurotransmitter, are the amygdala and hippocampus in the brain. Oxytocin reduces anxiety and short-term memory but has had inconsistent and small effect sizes, leading researchers in recent years to search for moderators that qualify and explain its effects on social behavior. For recent reviews, see Bartz et al. (2011) and Sanchez et al. (2009). We draw upon these below.

Figure 6.4, panel C, shows some of the important effects of oxytocin, but we stress that, rather than main effects, many of the variables interact with each other to produce their effects. All the research done to date has occurred with endogenous levels of oxytocin (where correlations are examined with neural or psychological variables) or exogenous levels (where experimental manipulations of oxytocin are done with intranasal sprays). We briefly summarize the research to date and focus on the effects of exogenous administration of oxytocin as moderated by key variables and speculate on research implications for buyer–seller interactions.

Oxytocin has been shown to influence emotion recognition especially for difficult tasks. Likewise in another study, oxytocin affected empathic accuracy but for subjects who were low versus high in social proficiency. We might expect ocytocin to facilitate buyer–seller interactions through its effect on enhancing detection of emotional reactions of actors, thereby promoting empathy and a customer orientation. The effects would seemingly happen more for salespersons lower in social skills. Thus oxytocin might be employed in training or even actual sales call situations to promote more effective exchanges.

Oxytocin nurtures trust. This does not occur, however, if the other person in the interaction is characterized as untrustworthy or is a member of an out-group that is in some way threatening. In addition, oxytocin induces trust in cooperative but not conflict or competitive relationships. However it should be mentioned that ocytocin has sometimes resulted in mistrust, envy, and relationship insecurity, but the conditions under which this occurs reliably have not been studied to date, so no clear implications for buyer–seller interactions can be made.

Bartz et al. (2011) considered a number of mechanisms possibly governing the effects of oxytocin on social relationships in order to explain discrepancies in the research literature found between (a) absence of main effects for oxytocin (43% of the time) and presence of interactions (63% of the time) and (b) the production of positive social effects of oxytocin and anti-social effects. Bartz et al. propose what they term a perceptual/social salience mechanism to account for discrepancies. This mechanism explains the effects of oxytocin on social behavior as a consequence of its moderating role on the processing of social cues. For example, oxytocin affects the allocations of attentional resources (e.g., increasing one's gaze to the regions of the eyes of an interaction partner) thereby potentially shaping social cognition (e.g., processing of affect from partner; sharing of emotions, knowledge, or points of view) or pro-sociality (e.g., trust, attachment). Future research might explore the moderating role of nasal administration of oxytocin on the relationship between (a) the processing of emotions, empathy, or felt anxiety by salespersons and customers and (b) social bonding, cooperation, or shared outcomes.

Vasopressin Vasopressin is positively related to anxiety, where it has been found that men tend to react aggressively in an unconscious way in social situations (e.g., to the perception of neutral faces), whereas women act affiliatively. In terms of memory, vasopressin tends to enhance both short- and long-term memory. Much less research exists into the effects of vasopressin on social behavior in comparison to oxytocin, and no research could be found in marketing. See Sanchez et al. (2009) for a review, and Thompson, et al. (2006) and Thompson, et al. (2004) for research into the effects of vasopressin in processing faces.

Figure 6.4, panel C, sketches some of the variables and effects that vasopressin might have, but we stress that "vasopressin's role in the relationship between human social behavior and health remain explored" (Sanchez et al. 2009, p. 338). The increase in anxiety due to vasopressin might be linked subsequently to avoidance behaviors and lead to negative effects on affiliative behavior. This should conceivably have a negative impact on buyer–seller interactions, yet could motivate one to strive to achieve more than colleagues or do better than the competitors. On the other hand, memory enhancing effects of vasopressin might facilitate exchanges between buyer and seller by promoting creative responses to customer needs when engaged in conversations under time pressures. Anxiety might interfere with, and memory enhancement might enable, processing of social cues in buyer–seller interactions. This then might moderate the effects of social cognition, perceived emotions, and social bonding over the course of a buyer–seller interaction. The role of vasopressin, which can be administered with a nasal spray, in buyer–seller interactions represents a promising area for study.

Three vital genes

The definition and meaning of a gene is undergoing change as we speak. Originally conceived as discrete units of heredity contained in DNA and RNA, a gene is now thought to be a continuum of transcripts (Pearson 2006). Or to combine elements from a definition worked-out recently by 25 scientists (Pearson 2006, p. 401) with one proposed by Gerstein et al. (2007, p. 677), we use as our working definition of a gene the following: a gene is a union of genomic sequences, corresponding to a unit of inheritance, which encodes functional products. Genomic sequencing is roughly a technique for determining the order of the building blocks making up one's DNA. Gerstein et al. (2007, p. 671) use an information processing metaphor to represent genes as subroutines in an operating system: "genes are … individual subroutines in this overall system that are repetitively called in the process of transcription".

The study of genes for explaining the behavior of managers is in its infancy. The idea is that genes in some way influence phenotypes, which are traits or states of people. An early and innovative program of research in this regard has been conducted by Nicolaou and colleagues who studied entrepreneurship. By the use of twins in an investigation of behavioral genetics, Nicolaou et al. (2008) found that 48% and 52% of the variance in the propensity to become self-employed was attributed, respectively, to genetic and environmental factors. Twin studies can ascertain the overall contribution of heredity and environment on behavior but do not identify which genes are at work. Nicolau et al. (2011), in a molecular genetics study found an association between the G variant of the dopamine receptor *DRD3* and becoming an entrepreneur. Likewise, Bagozzi, Verbeke, van den Berg et al. (2012) showed that the 7-repeat variant of the dopamine receptor *DRD4* gene was significantly related to CO (p = .04), whereas the A1 variant of the dopamine receptor *DRD2* gene was marginally related to an SO (p = .07). The rationale was that the 7-repeat variant of the *DRD4* gene has been shown to relate to curiosity and explorative behavior during interactions with customers, and reward sensitivity, attributes closely aligned with opportunity recognition, novelty seeking, and commercial success.

A shortcoming with molecular genetic studies, where main effects of genes on phenotypes are examined, is that such so-called small-scale candidate investigations might capitalize on chance and yield false positive results. There are so many genes open for study (approximately 21,000), many with multiple variants, and so many phenotypes from these to examine, that the search for gene associations risks producing spurious findings. One alternative approach is the so-called genome wide association study (GWAS) where the entire genome is explored for correlations with phenotypes and very large samples are taken. This hypothesis-free method uses very low significance levels and can find valid associations. However, the GWAS of main effects assumes that "nature" drives phenotypes.

Another approach, based on theory-driven principles, hypothesizes that phenotypes and human behavior are due to both nature and nurture. That is, genetic researchers have recently devoted special effort into the investigation of gene–environment interactions (e.g., Seabrook and Avison 2010). A gene–environment interaction is defined as "situations in which genetic effects connected to a phenotype are dependent upon variability in the environment, or when genes modify an organism's sensitivity to environmental features" (Seabrook and Avison 2010, p. 1277). Actually, gene–environment interactions might consist of gene–situation or gene–trait interactions. Also gene–gene interactions represent a related theory-driven direction of research. Such investigations are less susceptible to chance findings than main effect studies and can use smaller sample sizes than required for GWAS.

In one of the first gene–trait interaction studies to our knowledge in marketing, Van den Berg, Verbeke, Bagozzi et al. (2013) studied the roles of variants of the *DRD2* and *DRD4* genes

as moderators of the effect of attachment styles on customer orientation of salespeople. Specifically, the avoidant attachment style was found to positively influence customer orientation (a) for those salespersons with the A2/A2 variant for the *DRD2* gene but not for the A1/A2 or A1/A1 variants and (b) for those with the 7R+ variant of the *DRD4* gene. Secure and anxious attachment styles were unrelated to customer orientation and did not interact with either variants of *DRD2* or *DRD4* genes to affect customer orientation. Briefly, the rationale was that having an orientation of emotional distance and the trait of self-reliance, characteristic of persons with the avoidant style of attachment, is best suited for commercial relationships where buyer and seller must meet goals, norms, and requisites for professionalism, but primarily to the extent that salespersons exhibit the dopamine DRD4 $7R^{+}$gene receptors, which have been implicated in novelty-seeking behaviors. The anxious attachment style tends to be associated with the fear of rejection, which might not only impede a salesperson's efforts to ask for commitments from customers and close deals, but also might involve more procrastination in meeting with on-going customers and canvassing for new ones. The secure attachment style, which is characterized by "comfort with closeness" and seeking intimacy, likely conflicts with requirements by buyers and seller firms to meet own-company needs, which often are at odds with each other and demand give-and-take. Also it is possible to be too secure and experience complacency or lack of sufficient motivation and "hunger to make a sale". In sum, the avoidant style seems, for commercial business relationships, to strike a better balance between the anxious and secure styles.

One of the first gene–gene interaction studies in marketing to the best of our knowledge, was recently done by Bagozzi, Verbeke, van den Berg, Rietdijk, and Worm (2013). As with gene–environment interactions, gene–gene interactions have only recently begun to be conducted in the genetic literature. The authors investigated how functional polymorphisms of serotonin transporter and oxytocin receptor genes interact to influence CO by salespersons. Salespersons with two copies of the long allele (L/L) of the serotonin promoter polymorphism showed greater CO when also carrying two copies of the G/G oxytocin allele, than those with the A/G and A/A ocytocin genotypes. From another perspective, salespersons with the A/A oxytocin genotype exhibited greater CO for those with the S/S serotonin genotype, than those with the L/S and L/L genotypes. The rationale was that salespeople who show less sensitivity to anxiety and shame in social relationships (L/L subjects) will strive to achieve more mutual outcomes (i.e., be more CO) when the proclivity for receiving rewards in interactions is high (G/G subjects) than low (A/A subjects).

Genes can also influence neuro processes (e.g., Caldú and Dreher 2007). Verbeke, Bagozzi, van den Berg, and Lemmens (2013) examined the moderating role of oxytocin receptor genes on activation of the mirror neuron system. The results showed that salespersons with the G/G allele experience significantly greater bi-variate Granger causality than salespersons with the AG or AA allele. In particular, the brain regions more activated for salespersons with the G/G versus A/A and A/G alleles were the pars opercularis and the amygdala. This is consistent with research implicating oxytocin in the functioning of empathy and its associated emotional processing, particularly automatic, bottom-up processing.

In short, emerging research in marketing studying buyer–seller interactions has explored the role of three genes. These include dopamine receptor (*DRD2* and *DRD4*), serotonin transport, and oxytocin receptor genes. This work, which began from the behavioral genetic point of view, has evolved to molecular genetic investigations where specific genes and their effects can be identified. Further, theory-driven research has just begun where gene–situation, gene–trait, and gene–gene interactions have been proposed and tested in marketing. The future is likely to see GWAS studies, as interest and resources emerge in genetic effects. Moreover the moderating

roles of genes and hormones in neural processes are likely to expand as well in marketing research. An example of the effects of gene–gene interactions with the environment on cortisol levels can be found in Verbeke, Van den Berg, Bagozzi, and Belschak (2013).

Managerial implications and future research

Our presentation shows that interactions between salespeople and customers can be studied from a biological perspective. Oft studied psychological processes can be seen to reside in hard-wired biological processes which are shaped by evolution; they can be studied using methods from genetics, endocrinology, and neuroscience. However, these hardwired biological processes also interact with the social environment in a process termed "reciprocal determinism", where learning joins with genetics to shape behavior. There are two implications for this: first, findings from a biological perspective on selling not only tell us something about the the human substrate of salesforce behavior but also about the social environment. In other words, this biological approach allows us to better understand how managerial outcomes can be influenced by selecting salespersons with fruitful characteristics and changing the environment to take advantage of predispositions of salespersons as well as shape their learning in response to environmental changes. Second, making predictions based on insights from biology about salespeople's behaviors/performance is not easy because biological processes and environment constantly interact and evolve. This means that management must obtain a deep understanding of specific biological processes undergirding salesforce behavior and apply training, leadership, compensation, and other management tools best fitting the biology of salespersons. The marketing and management and organization literatures are only now beginning to understand the possibilities here. Research will soon tell us which person is best suited for specific tasks as we come to understand better how brain, body, and mind function in integrated ways in response to, and in shaping, one's environment.

A number of key readings can be suggested for readers desiring to learn more about the biological bases of behavior and apply the knowledge residing here to marketing in general and salesforce behavior in particular. Excellent background in basic neuroscience as it applies to social behavior can be found in Cacioppo and Berntson (1992), Cacioppo and Decety (2009), Cacioppo and Decety (2011), and Lieberman (2007, 2010). Likewise neuroscience in management and organizations can be found in Bagozzi, Verbeke, van den Berg, Rietdijk, Dietvorst, and Belschak (2013), Butler and Senior (2007), Becker, Cropanzano, and Sanfey (2011), Lee, Senior, and Butler (2012), and Senior, Lee, and Butler (2011). For references to ideas and research on hormones, see Becker et al. (2002) and Ellison and Gray (2009). Finally, background on genetics can be found in Brooker (2008) and Strachan and Read (2011).

Conclusion

Recent developments in biology have been breathtaking and are revolutionizing the behavioral and social sciences. We have attempted to show that these developments are natural evolutions of scholarship in marketing that began with S-R perspectives and evolved to S-O-R and most recently cognitive response points of view. At the same time, progress in biology has been piecemeal in marketing and is only now emerging to shape the field. Our goal was to provide needed structure to the mass of research in the biology literature, show how recent marketing contributions fit into this structure, and point to possibilities for the future. To do this, we drew upon the new social neuroscience paradigm and adapted it to the study of buyer–seller interactions by presenting our own unique perspective and model. We showed that research needs to integrate principles and

findings across three areas of focus in biology: namely, that dealing with neural mechanisms, hormones, and genes. By doing so, and spanning both social science knowledge, especially psychology and managerial research, we offer the possibility for deepening our understanding of buyer–seller interactions and identifying managerial policy areas to target for change.

Notes

1 It is beyond the scope of this chapter to discuss the many developments in the cognitive revolution, as important and fundamental as they have been. For insightful commentaries on the cognitive revolution, see Pinker (2003), Miller (2003), Mandler (2002), and Bruner (1990). For a nice history and analysis of behaviorism from a philosophical point of view, see Graham (2010).
2 Some argue that even the biology of behavior can only be understood from a cellular perspective (Llinás 1989), and it might even be said that the cellular can only be understood from a quantum physics point of view. Without denying either reductionistic claim, we believe that much can be learned in marketing by working within a social neuroscience framework at this time.
3 Actually, the effect of felt shame on performance and organization-based altruistic acts was mediated by coping responses and moderated by culture (independent versus interdependent) (not shown in Figure 6.4, panel A).

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7

Neurophilosophy of explanation in economic psychology

An exposition in terms of neuro-behavioral decision systems

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Abstract

The future of marketing as a serious intellectual approach to understanding consumer and marketer behavior requires a solid, evidence-based, and critical underpinning based on neuroscience. Neurophilosophy, which is concerned with the metatheoretical basis of the explanation of behavior, is employed in this chapter to promote critical awareness of the role of neuroscience in marketing and consumer research. In particular, it is argued that economic psychology and its application area, marketing, must come to terms with the rigorous use of cognitive language and explanation. This is approached by the explication of a theory of normal and addictive consumer behavior (the competing neuro-behavioral decision systems hypothesis) in which the neural foundations of behavior, together with the theories and findings of behavioral science, are presented as means of circumscribing the cognitive interpretation of choice. The chapter concludes by noting the promise of an integrated framework for consumer and economic psychology in which behavioral economics, neuroeconomics and picoeconomics provide the explanatory bases of consumer behavior.

Key words

Neurophilosophy, neuroscience, neuroeconomics, picoeconomics, competing neuro-behavioral decision systems, addiction, explanation.

Introduction

Although in everyday discourse we are used to taking a folk psychological approach to understanding the behavior of ourselves and others, a scientific account of consumer choice requires more stringent guidelines for the use of cognitive language. Folk psychology consists in attributing beliefs, desires and feelings to others to make their conduct more intelligible but there is always the danger of proliferating putative mental entities which, despite being inferred from behavior, are then used to "explain" it. If my neighbor characteristically shows signs of

being angry when making purchase decisions, it is easy to conjure up the personality trait of *anger* to account for his behavior even though the real causes lie in the outcomes of his choices and the aversive nature of the situation in which he has to make them. This is the standard behaviorist criticism of cognitive explanation: that it multiplies "mental way stations" to account for behavior when (a) these are no more than redescriptions of the behavior itself and (b) they do not refer to anything that can be subjected to experimental test. The criticism deserves to be taken seriously though it does not mean that cognitive and other intentional explanations are invalid in behavioral science. It merely means that rigorous criteria must be applied to their usage. This chapter argues that these criteria involve the development of a *neurophilosophy* that is appropriate to the explanation of consumer choice.

The central concern of neurophilosophy is to elucidate the relationship of the mind to the brain (Churchland, 1986; Rolls, 2012), a consideration made essential by the arrival of neuroscience in marketing and consumer psychology. The achievement of a neurophilosophy is necessarily a multi-disciplinary task and the success of the venture requires bringing together economics and psychology, biology and philosophy, as well as marketing and consumer research. In particular, this chapter argues that economic analysis is essential to establish the microfoundations of the economic psychology on which marketing analysis rests. In order to avoid the aridity of highly abstract theorizing however, the following discussion is concerned with explaining consumer choice over the *continuum of consumption* (Foxall, 2010) from the most routine everyday shopping to the most extreme compulsive and addictive behaviors. This arrays consumer choice in terms of the degree of self-control or impulsiveness demonstrated by the consumer (Figure 7.1). In order to explain this continuum of behaviors, the chapter examines a theory of normal and addictive behaviors which is based on the differential performance of competing brain regions and shows how its complete implementation as a theory of consumer choice requires the incorporation of an appropriate level of cognitive functioning. Having noted the reliance of the competing NBDS hypothesis on behavioral economics and neuroeconomics, the chapter examines a third level of economic analysis, represented by *picoeconomics* (Ainslie, 1992) as a candidate for a cognitive level of explanation in consumer psychology.

The competing neuro-behavioral decision systems hypothesis

The competing neuro-behavioral decision systems (NBDS) hypothesis proposes that normal and addictive behaviors are influenced by competing brain systems that deal respectively with the release of dopamine in the course of reinforcement learning and the evaluation of rewards

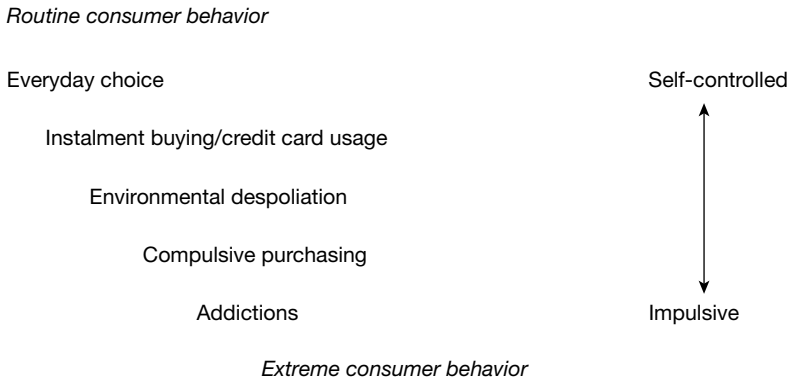

Figure 7.1 The continuum of consumer choice

in relation to their consequences. The former is based on the amygdala and ventral striatum and addiction results when this system becomes hyperactive through what Bechara (2005, p. 1459) calls "exaggerated processing of the incentive value of substance-related cues." The finding that drug-induced behaviors are associated with increased activity in the amygdala and ventral striatum is consonant with this view as is evidence for the tendency for the amygdala to become over-sensitized to reward (London et al., 2000; Bickel & Yi, 2008). This midbrain region is apparently concerned with determining the valence of the immediate consequences of action. A second system, located in the prefrontal cortex is, in the case of normal behavior, concerned with the executive functions of planning and foresight but its hypoactivity in the case of addiction exacerbates the influence of the hyperactive dopaminergic reward pathway leading to dysfunctional behavior. The NBDS model adds to the analysis provided by Bechara and others which proceeds exclusively in physiological terms by providing an economic perspective.

Reinforcer pathologies

The competing NBDS hypothesis invites two strands of economic analysis, behavioral economics and neuroeconomics, which are brought to bear on the "reinforcer pathologies" that lie at the heart of addiction. The style of behavioral economics which Bickel, however, employs is based upon the fusion of basic neoclassical microeconomics with the experimental method of operant psychology (Hursh, 1984) which has found ready application in the investigation of addiction (Bickel & Vuchinich, 2000; Vuchinich & Heather, 2003). The reinforcer pathologies the analysis of which is central to the competing NBDS hypothesis involve (1) an excessively high preference for immediate acquisition or consumption of the reinforcer even when this is known to have longer-term deleterious effects and/or (2) an excessively high valuation of a commodity (i.e. a behavior, experience or physical substance) (Bickel, Jarmolowicz, Mueller, & Gatchalian, 2011. See also Bickel, Landes, Christensen, Jackson, Jones, Kurth-Nelson, & Redish, 2011).

Addiction as constriction of temporal horizon

The capacity of a reinforcer to influence behavior is a function of the length of delay between the performance of the behavior and the receipt of the reinforcer. In other words, the immediacy with which the individual seeks to acquire (and use) a commodity is assessed in terms of the extent to which the value of a reward for an individual decreases with the time he or she has to wait for its delivery. Most people, and some animals, prefer to receive commodities earlier rather than later and exact premium payments, such as interest on loans, if they are required to wait. An especially pertinent finding of recent research is that human discounting follows a hyperbolic rather than an exponential form. In exponential discounting, the discounting occurs at a fixed rate per unit of time: this is the rational approach to financial transactions followed by banks that loan money to business and individuals. The larger-but-later reward (LLR) is more highly valued than the sooner-but-smaller reward (SSR) at all times and the temptation to select the latter over the former is minimal (Figure 7.2). However, in hyperbolic discounting the rate at which a commodity is discounted decreases with the time that has elapsed (Ainslie & Monterosso, 2003). Although the LLR is initially valued more highly than the SSR, as the availability of the latter becomes imminent its valuation soars and the temptation is to settle for this immediate reward over the delayed but objectively more valuable one (Figure 7.3).

Behavioral economics is especially relevant to the portrayal of addiction as "a constriction of temporal horizon" in which the tendency towards temporal discounting, especially hyperbolic,

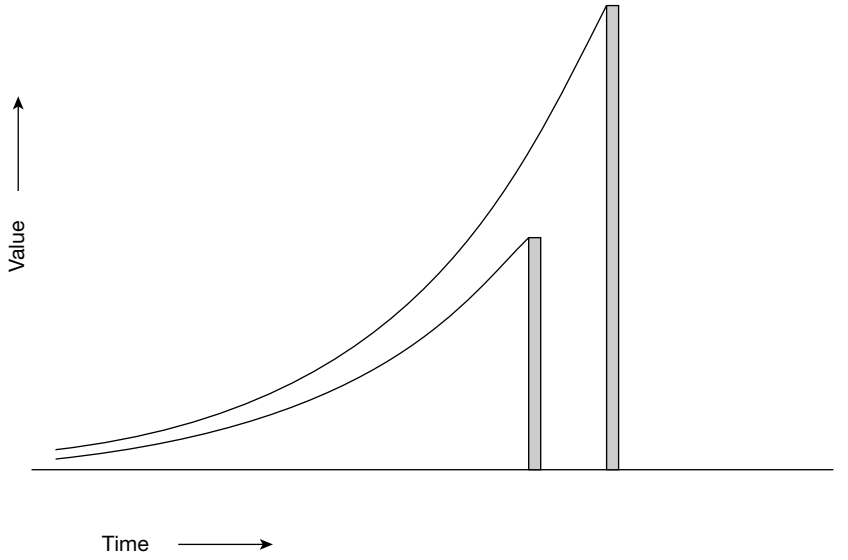

Figure 7.2 Exponential discount curves from two differently sized rewards available at different times

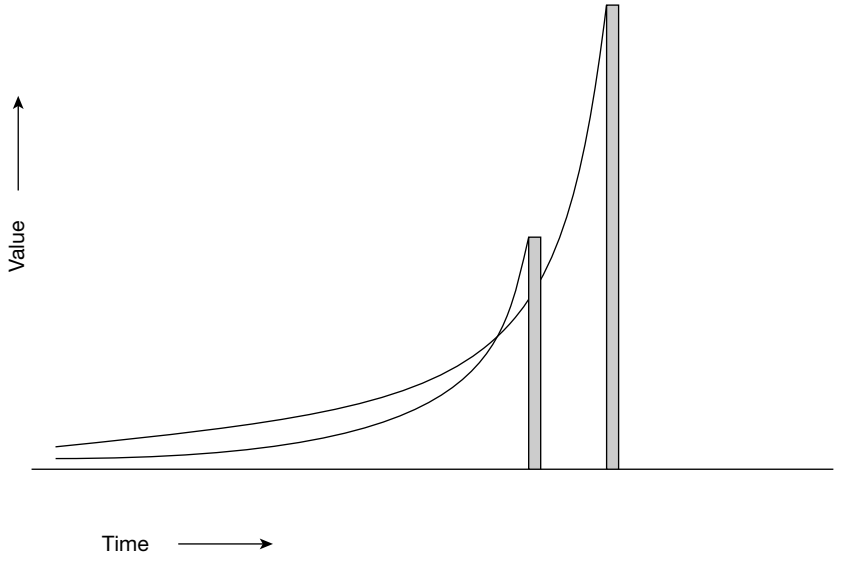

Figure 7.3 Hyperbolic curves for two differently sized rewards available at different times

contributes both to the definition of addiction and the measurement of imbalance between the impulsive and executive systems (Bickel et al., 2006).

Addiction as exaggerated valuation

These pathologies, which manifest as exaggerated demand for such commodities as food, opportunities to gamble, drugs, etc., have been analyzed by common techniques of behavioral

economics. In particular, price elasticity of demand, a measure of the sensitivity of consumption level (quantity demanded) to changes in price has been used to assess the valuation placed on a commodity. A steep increase in the unit price of a commodity that is followed by only a very small decrease in quantity bought would indicate high valuation of the item, perhaps to a pathological degree. Addiction, on almost any definition, entails the continued consumption of a commodity even when the immediate and long-term costs thereby incurred increase sharply; the inelasticity of demand in the face of price rises (i.e. insensitivity of consumption to changes in cost) is indeed the prime definitional point employed in economic treatments of addiction (Becker & Murphy, 1988).

Behavioral economics meets neuroeconomics

The economic valuation of reinforcers is the focus of neuroeconomics (Glimcher, 2004, 2011). An organism's ability to discriminate and form a valuation of the reinforcing consequences of its behavior is a prerequisite of its survival and, ultimately, its biological fitness (Schultz, 2000; Rolls, 2008). Neuroeconomics is based on the understanding that this ability has a counterpart in neural activation (Camerer, Loewenstein, and Prelec, 2005; Glimcher, 2004; Politser, 2008). The basic assumption of neuroeconomics is that evolved neural mechanisms assist the prediction of the potentially reinforcing and punishing consequences of specific responses by facilitating comparisons of potential rewards with those that have followed similar behavior enacted in similar circumstances in the past. Reinforcing outcomes of behavior thus become goals for continued responding (Rolls, 2008). As goals, the discriminative stimuli of behavior analysis, reinforcers elicit approach behavior, motivating the acquisition of reinforcers; in addition, they are instrumental in generating emotional states that act as the ultimate rewarding effects of behavior and so promote its continuity (Schultz, 2000). Specifically, by maintaining operant responses, reinforcers control the rate at which learning occurs by making possible calculations at the neural level of discrepancies between the predicted reward and that which has been forthcoming in the learning history of the individual. The capacity of the activities of dopamine neurons to index the difference between expected or predicted rewards on the one hand and actually occurring rewards on the other in this way gives rise to the "reward prediction error" which is the basic unit of analysis of neuroeconomics (Rolls, 2008).

Schools of neuroeconomics portray it variously as a search for the substrates of economic decisions or the description and analysis of neural operation in economic terms (Ross, 2008). Zak (2006, p. 133) portrays neuroeconomics as mapping "economic decisions straightforwardly into the neural substrates that produce those decisions." Evolution by natural selection has ensured that brains acquired the capacity to rank competing behavioral opportunities ordinally, i.e. to value alternative responses. The valuation process involves dopaminergic neurons the rate of firing of which differs according to whether a stimulus is more or less advantageous than the expectation derived from learning history (Schultz et al., 2008; Montague & Berns, 2002).

Two brain regions account for reward (Politser, 2008) and their identification in neuroeconomics clarifies the neurophysiological basis of the competing NBDS hypothesis. The striatum, located in the basal ganglia and incorporating the nucleus accumbens (Nacc), works with the hypothalamus, amygdala and hippocampus, which have been collectively identified as the so-called "emotional centre" of the brain. Adjacent to this are areas concerned with reward: the ventral tegmental area (VTA), the pars compacta of the substantia nigra (SNpc) and the anterior cingulated cortex. The brain region to which these belong is much older in evolutionary time than the second of the neurophysiological areas involved in the processing of reward. This is the prefrontal cortex (PFC) and, especially, the orbitofrontal cortex (OFC) which is particularly dedicated to processing

reward. While dopamine (DA) is not the only neurotransmitter of significance to reward processing, its role is very germane to the explanation of economic behavior. Reward signals are emitted by the VTA and SNpc that take the form of the emission of DA at rates that facilitate comparison with a baseline level thus enabling an assessment of whether the reward matches, falls short of, or exceeds expectation. Since changes in DA levels release influence behavioral outputs, reward processing in the dopaminergic system entails learning. But learning is a process that is intimately connected with emotionality (LeDoux, 1998).

McClure, Laibson, Loewenstein and Cohen (2004) report a landmark study employing fMRI scans of humans choosing between SSR and LLR. When scrutinizing immediate rewards, the participants activated brain regions generally considered to involve emotion, namely medial orbitofrontal cortex, medial prefrontal cortex/pregenual cingulate cortex and ventral striatum. When considering longer-term payoffs, however, areas of the lateral prefrontal cortex (which is related to higher cognitive functioning), and part of the parietal cortex related to quantitative reasoning were activated.

Conceptual development

Extensional and intentional explanation

Neuroscience and behavioral science employ extensional language, the third-personal mode which is taken as the hallmark of science (Dennett, 1969). The truth value of extensional sentences is preserved when co-designative terms are substituted for one another. The phrase, "the fourth from the sun" can be substituted for "Mars" in the sentence "That planet is Mars" without surrendering the truth value of the sentence. However, the truth value of a sentence containing intentional language, such as "believes," "desires" or "feels," is not maintained when co-designatives are substituted. Given the sentence, "John believes that that planet is Mars," we are not at liberty to say, "John believes that planet is the fourth from the sun," since John may not know that Mars is the fourth planet. Intentional sentences have another unique property: the *intentional inexistence* of their subjects. The truth-value of my saying that I am driving to Edinburgh this weekend (an extensionally-expressed statement), is established by there being a place called Edinburgh to which I can travel. But if I say that I am seeking the golden mountain, looking for the fountain of youth or yearning for absolute truth, none of the entities named in these intentional expressions need actually exist for the truth value of the sentences to be upheld. Finally, it is not possible to translate intentional sentences into extensional ones without altering their meaning. Intentional sentences usually take the form of an "attitude" or verb such as *believes, desires* or *wants* followed by a proposition such as "that today is Tuesday" or "that eggs are too expensive;" hence, such sentences are known as "propositional attitudes." (For further discussion of the linguistic nature of intentionality, see Chisholm, 1957.)

The need for clarification

Bickel and his colleagues advance the hypothesis that two competing neural systems exert either excitatory or inhibitory control over potentially addictive behavior (Bickel & Yi, 2008). Bickel's insight deserves special attention for its overarching understanding of addiction as a failure of the temporal horizon from which follows the incorporation of behavioral economics and neuroeconomics and the consequent enhancement of its applicability to the treatment of addicts (Bickel et al., in press *a;* Ross et al., 2010). The term "neuro-behavioral decision system" contains three components of a theory of choice: the neurological, the behavioral and the cognitive. The

task of a theory is to show how these are related; that of a theory of addiction is to show how they combine to enhance understanding and treatment. Theories involve philosophical considerations and any theory of addiction is multi-disciplinary. These observations require that the theoretical target that is central to this investigation be briefly contextualized in terms of empirical research and theoretical positioning as a prelude to clarifying the problem of explanation that lies at the heart of the current investigation.

In spite of the contribution of Bickel to the NBDS model, notably in the form of a progressive research program, this paradigm is broader than the work for which he is directly responsible. The idea that human decision-making is governed by separable but interacting brain regions can indeed be traced to several authors. Damasio's (1994) somatic marker hypothesis and Bechara's (2005) suggestion that both normal and addictive behaviors are controlled by the interaction of *impulsive* and *reflective* brain systems represent important contributions to this line of thought (see also Bechara et al., 2000; Verdejo-García & Bechara, 2009). Hence, the competing NBDS model cannot be said to be isolated from research by other investigators, to pursue a maverick theoretical route, or to rely on empirical findings from a single laboratory. The notion of competing impulsive and executive systems is, moreover, found in several theories of addiction, some of which consider more explicitly the cognitive dimension of the conflict between the interests and agents in terms of which their authors portray the decision-making process responsible for the interludes of compulsion and sobriety that are apparent in the behavior patterns of addicts. Ainslie (1992) speaks, for example, of the successive strategic *interests* which influence patterns of choice in substance abusers, and Ross (2012) alludes to *sub-personal agents* which contend with one another as a result of their multiple inharmonious utility functions or temporal horizons.

The use of cognitive language in these theories lacks theoretical coherence, however. Sometimes valuations and decisions are said to be taken by the individual, sometimes by the brain, sometimes specifically by neurons. At other times, activities at each of these locations are described non-cognitively and their causation attributed to neurophysiology or environmental contingencies. Alongside a number of theoretical positions on addiction, therefore, the NBDS model stands in need of conceptual development insofar as it confuses levels of explanation, notably the sub-personal level which is concerned with neural functioning, the personal level which is the domain of beliefs, desires and other intentional ascriptions which form the basis of cognition, and the super-personal level which relates the rate of behavioral responding to its reinforcing and punishing consequences. The solution requires conceptual development that reflects the nature and scope of cognition and employs the biological and psychological sciences to ensure that the use of cognitive language, which refers to unobservables that are not amenable to direct empirical observation and test, is consistent with canons of scientific judgment.

In seeking to clarify the place of cognition in the competing NBDS model, an important consideration is, therefore, the language in which behavior is explained and interpreted. The monograph is philosophically founded on the understanding that accounts of behavior based on neuroscience, cognitive science and behavioral science respectively entail unique uses of linguistic terms and therefore distinct kinds of explanation. The approach proposed in this chapter facilitates the separation of these levels of explanation as well as clarifying their interrelationships. The integrative role of this approach is furthered by the demonstration that three modes of economic analysis – namely, picoeconomics (Ainslie, 1992) as well as the behavioral economics and neuroeconomics (Glimcher et al., 2009) which are already part of Bickels' model – link the biological, behavioral and cognitive components of neuro-behavioral decision systems. The result is a structure that comprehends both the competition between and the interaction of the impulsive and executive systems, and integrates the portrayal of addictive behavior in economic terms.

The proposed development of the NBDS hypothesis involves more than terminological clarification. The principles just described govern not only linguistic usage but also the kinds of theories we invoke in order to explain our subject matter and care must be taken to ensure that each is confined to the level of explanation or interpretation to which it is appropriate. Cognitive terminology is intentional and belongs only at the level of the person (Bennett & Hacker, 2003). The critique of the NBDS hypothesis takes the form therefore of conceptual development.

The NBDS hypothesis is described by Bickel and colleagues in neuroscientific, cognitive and behavioral terms without regard to the domains of explanation to which each of these categories belongs. For example, although they offer what purports to be a behavioral definition of executive function (EF), they define several of its component parts in terms that are cognitive. Following Barkley (1997a, 1997b), they define EF as "classes of self-directed behavior to change one's future reinforcement" (Bickel et al., in press, a) But they list among those of its elements which suggest "cross-temporal organization of behavior": *attention, planning, valuing future events* and *working memory*. These are clearly cognitive events. Similarly, among the elements that make up "emotional and activation self-regulation," they list: "the processing of emotional information" and "initiating and maintaining goal-related responding." Finally, as elements of "metacognitive processes" they list: "social cognition" or "theory of mind" and "insight." Bickel et al. (in press, a) define impulsivity apparently behaviorally as "actions that appear prematurely expressed, unduly risky, poorly conceived, and result in undesirable consequences." They describe impulsivity, however, as comprising "trait impulsiveness" which is a structural personality variable that includes, they say, sensation-seeking, "attention deficit impulsivity" which manifests as a "diminished ability to persist" and which leads to risk-taking, "reflection impulsivity" which is a "deficit in the tendency to gather and evaluate information before making a decision" (ibid.). All of these are intentional.

The nature of cognition

We approach now the proper use of the extensional behavioral- and neuro-sciences in consumer psychology: to constrain the use of cognitive language and explanation. They achieve this in two ways. First, by establishing causal relationships between the independent variables which they feature and behavior; secondly, by establishing a basis by which the scientific consistency of cognitive explanations can be judged and where necessary reined in. The first precludes the need for an intentional explanation as long as the investigator's aims do not go beyond the prediction and control of his or her subject matter. Any scientific objectives that transcend this minimal aim require the language of intentionality. We are still left with the problem of what intentional language content to ascribe in order to illumine our subject matter and how to constrain its use so as not to incur the behaviorist's wrath by opening ourselves to the charge of profligacy.

In order to solve this, let us define cognition more precisely. Heyes (2000, p. 4) states that "cognitive states and processes are (1) theoretical entities, which (2) provide a functional characterization of operations of the central nervous system, (3) may or may not be objects of conscious awareness, (4) receive inputs from other cognitive states and processes and from perception, and (5) have outputs to other cognitive states and processes and to behavior." She thus demarcates perception from cognition but this seems an arbitrary distinction in the present investigation. Writing in the same evolutionary context, Shettleworth (2000, p. 43) proposes a broader conception: "a full account of the evolution of cognition should embrace all mechanisms that invertebrates and vertebrates have for taking in information through the senses, retaining it, and using it to adjust behavior to local conditions." Cognition, she notes, is "information processing in the broadest sense, from gathering information through the senses to making decisions and performing functionally appropriate actions, regardless of the complexity of any

internal representational processes that behavior might imply" (ibid.). Without surrendering Heyes's insights with respect to its theoretical nature, therefore, this broader understanding of the scope of cognitive logic is adopted here. Nor is affect removed from the scope of cognition: following Tooby and Cosmides (1992), emotion is included as an aspect of cognition.

The statement that cognitive states and processes are theoretical entities is based on the understanding that cognitive terms refer to unobservables which, though not directly amenable to experimental analysis, are used by investigators to increase the intelligibility of their subject matter. Although cognitive activity appears, on the basis of our personal experience to be real, therefore, it is not part of a causal explanation of behavior. Cognition is not a demonstrable property of individuals but is ascribed on the basis that their beliefs will be consistent with their behavior patterns and current situation including their neurophysiological functioning. So Dennett (1987) argues that we can predict the behavior of an intentional system by ascribing to it the beliefs and desires it can be expected to have given its current situation and learning history. Although the present aim is to explain behavior rather than necessarily to predict it, a similar logic of ascription applies. Hence, the purpose of a cognitive analysis is to reconstruct the beliefs and desires by which an individual most probably acted. This is neither a causal nor an experimental analysis: it is an *interpretation* rather than an explanation.

Especially pertinent here is the proposition that cognitive states and processes are theoretical entities which implies that they refer to "unobservables," terms employed to make behavior more intelligible in the absence of directly observable variables of which it can be shown experimentally to be a function. Whether behavior can be accurately predicted from the ascribed intentionality resulting from cognitive analysis is an empirical question. The immediate purpose of that analysis is to reconstruct the belief system in accordance with which individuals have apparently acted. Shettleworth's broader conception of cognition is also adopted at this stage.

A second observation is that, although cognitive activity is real in a first-personal phenomenological sense, it does not cause behavior in the strong sense which would be demonstrated by such analysis. What, then, is the role of cognition in a theory of behavior? Rational beings (and there are evolutionarily-consistent arguments for humans to be expected to act rationally: Dennett, 1995) can be predicted to behave *in accordance with* the beliefs and desires which can be logically ascribed to them on the basis of their phylogenetic and ontogenetic histories. The purpose of a cognitive analysis is thus to reconstruct the beliefs and desires which are consistent with the manner in which individuals have been observed to act, given their evolution by natural selection and their experience. Such an account supposes no more than a weak form of cognitive-behavioral causality and may better merit the term *interpretation* than explanation.

These two considerations entail the need of a methodological rationale for the ascription of cognition in these circumstances. The following approach, which has been employed in the economic psychology of consumer choice (Foxall, 1996, 2007), is proposed. The guiding principle is to employ intentional language (and therefore intentional language explanation) only when extensional language has been exhausted, namely in the spheres of behavioral continuity/discontinuity, the personal level of explanation, and behavioral interpretation. In this way, it is expected that the role of neurophysiology and operancy in the interpretation of behavior will become apparent.

Levels of exposition

Conceptual development of the kind required introduces the realm of neurophilosophy which is concerned inter alia with the relationship between explanation in mental terms such as believing, desiring and feeling and the anatomy and physiology of the brain: the classic "mind-

body problem" (Churchland, 1986; Rolls, 2012). Even though the analysis is of linguistic usage rather than ontology the precise bearing that the intentional terms of psychology and the extensional terms of neuroscience have upon one another is central to the kind of explanation they generate.

Dennett (1969) distinguishes the *sub-personal level of explanation*, that of "brains and neuronal functioning" from the *personal level of explanation*, that of "people and minds." The sub-personal level thus entails a separate kind of scientific purview and approach to explanation: by encompassing neuronal activity it is the domain of the neuroscientist and leads to an extensional account. The personal level which is the domain of mental phenomena is that of the psychologist; it requires an intentional account. A third level of explanation has also been proposed in order to cover the whole range of phenomena and sciences that deal with them in a comprehensive approach to the explanation of behavior (Foxall, 2004). This is the *super-personal level of explanation* which encompasses operancy, the respect in which the rate of behavior is contingent upon its reinforcing and punishing consequences; this is the field of extensional behavioral science.

In order to avoid duality, however, it is necessary to be absolutely clear that whereas two of these three levels, those demarcated by neurophysiology and operancy, are clearly associated with ontologies that can be demonstrated by the inclusion of physical entities in experimental analyses, the posits of the third, the contents of intentionality, do not refer to any such entities. They are theoretical constructs only. Moreover, they are inferred from the empirical outputs of scientific investigations involving neurophysiology and operant psychology. We do not know anything at the cognitive level of exposition that we have not derived from what we know of brains and behavior. But the cognitive account is not a mere redescription of neurophysiological and operant explanations. It is an interpretive extension which answers questions that cannot be answered by the extensional sciences that deal with these levels of exposition. The cognitive exposition does not refer – just as Dennett says intentionality does not refer. It does not denote a separate ontology from those described by neurophysiological and operant expositions: it supplements their explanations of behavior and its causes by interpreting them further. The intentionality to which it refers does not inhere within either neurophysiology or operancy: it is solely a property of the sentences of which cognitive exposition is composed. As such, cognitive exposition does not identify causes of behavior; nor does it of itself enable the prediction of behavior: rather, it advances the explanation of behavior by accounting for aspects of behavior like its continuity and discontinuity that are not extensionally construable.

Care is necessary to maintain the separation of these three levels since the mode of explanation which each entails is unique and cannot be combined with the others in a simple fashion. The fundamental difference in mode of explanation which must be constantly recognized is as follows. The sub- and super-personal levels, which are based on the neuro- and behavioral-sciences respectively, require the use of extensional language and explanation. Both of these are in principle amenable to experimental ("causal") analysis, or failing this to the quasi-causal analysis made possible by statistical inference. They differ from one another in terms of the kind of stimuli and responses (independent and dependent variables) that must be taken into consideration in empirical testing of the hypotheses to which they give rise. They differ more fundamentally from the personal level of explanation, which attracts a wholly different mode of analysis, namely that of intentional psychology; the approach to explanation in this case relies on the ascription of beliefs, desires and feelings on the basis of non-causal criteria.

The necessity of using intentional language arises in three situations: accounts of behavior that seek to comprehend its continuity or discontinuity, constructing a personal level of explanation for behavior, and delimiting behavioral interpretations more generally (Foxall, 2004). The identification of instances in which the use of intentional language is required does

not, however, determine either the structure or the content of the propositional attitudes in terms of which explanation should proceed. Behaviorists have rightly condemned the invention of traits, be they of anger, enthusiasm or desire, to which explanatory functions are attached despite their derivation from and re-description of the observed behavior to be explained. The quest for a rationale for the ascription of intentionality has often invoked evolutionary logics and neurophysiological operations. Dennett (1969), for instance, having established the inevitability of employing intentional terms proposes that this be founded on the evolution through natural selection of afferent-efferent neuronal links appropriate to the performance of a behavior that is appropriate to the circumstances faced by the organism. How does a hungry dog "know" which of the responses in its repertoire it should emit when faced with food? We can answer this by attributing desires and beliefs to the animal that are consistent with its having acquired appropriate sensory-motor linkages at the neural level in the course of natural selection. But Dennett's method rests on an unwarranted presupposition of intentionality when an extensional explanation of the behavior is readily available. There is no need to suppose that dog needs to "know" how to act: the appropriate response can be easily accounted for in terms of operant learning and demonstrable afferent-efferent links. More importantly, Dennett's proposed solution is actually a means of attributing intentionality at the neural level and fails to maintain the personal/sub-personal distinction on which the ascription of intentionality depends if it is to avoid the mereological fallacy (that is to avoid ascribing to part of a system attributes that belong only to the system as a whole; see Bennett & Hacker, 2003).

Picoeconomics: addiction as failure to anticipate

Intertemporal conflict

Herrnstein's (1997) matching law suggests that the value of a reinforcer is inversely proportional to its delay, i.e. as the delay becomes shorter, the value increases dramatically. This is the essence of hyperbolic discounting. The key difference between exponential and hyperbolic discounting, as we have seen, is that in the former the LLR is always preferable to the SSR, regardless of time elapsed, whereas in the latter there is a period during which the SSR is so highly valued (because the time remaining to its possible realization is so short) that it is preferred to the LLR (Ainslie, 1992). This is clearly not because of its objective value which is by definition less than that which can be obtained through patience, but because the time remaining to its possible realization is now so short, that it is preferred to the LLR. Ainslie notes that these findings harmonize with Freud's observations that an infant behaves as if expecting immediate gratification but becomes, with experience, willing to wait for the longer-term alternative. In other words, still paraphrasing Freud, if the pleasure principle is resisted, the outcome will be the exercise of the reality principle. In the terminology of behavioral psychology, the operants relevant to each of these principles are shaped by their respective outcomes. Ainslie argues that the two principles can be represented as two *interests*, each of which seems to employ devices that undermine the other.

In discussing what these devices are, Ainslie (1992) gives a clue as to how we may speak of phenomena in a cognitive account, i.e. one that conforms to the use of cognitive logic as we have defined it, for instance, is *precommitment,* in which for instance one joins a slimming club in order to be able to call upon social pressures in order to reach long-term goals. The very language of this account indicates the relevance of the models of cognition we have developed. The processes are unobservable, adopted in order to make behavior intelligible once the extensional accounts of behavioral and neuro-science have been exhausted. Secondly, the

interests may hide information from one another, e.g. about the imminence of rewards. Thirdly, the emotions that control short-term responding may be incapable of suppression once they are in train or they may be foreshortened by long-term interests. Finally, current choices may be used as predictors of the whole pattern of behavior, consisting of a sequence of multiple behaviors belonging to the same operant class, in which the individual will engage in future. An individual may, that is, see her present choice of a chocolate éclair as indicative that she will make this selection repeatedly and often in the future. Individual choices are thus perceived as precedents. The resulting strategy is what Ainslie later described as *bundling,* in which the outcomes of a series of future events are seen cumulatively as giving rise to a single value. When this value, rather than that of a single future event, is brought into collision with the value of the single immediate choice, the long-term interest is thereby strengthened.

Subsequent behavior that serves the longer rather than the shorter-term interest is apparently rule governed rather than contingency shaped (Skinner, 1969). However, the "rules" exist only in the mind of the individual who may not have encountered the contingencies. It is intellectually dishonest to refer to them as rules in the sense proffered by radical behaviorists which require empirical confirmation that the individual has previously encountered similar contingencies or whose rule-following behavior from others of similar kind to the present has been reinforced. Since we have no empirical, in particular, experimental indication of this nature, we would more accurately refer to them as beliefs. Our use of intentional language indicates the nature of our explanation or, better perhaps, interpretation. Better to characterize our account as interpretation and make this explicit by using intentional language (Foxall, 2009).

Picoeconomics as a cognitive level of exposition

How far does picoeconomics measure up as a cognitive level of exposition for a theory of economic psychology, one that is consistent with the neurophilosophical principles adduced earlier? This question devolves into two criteria: the first involves the extent to which picoeconomics enhances understanding of the continuity/discontinuity of behavior, and the personal level, and to the delimitation of behavioral interpretation; the second depends on what picoeconomics reveals about the relevance and role of operancy and neuroscience in the interpretation of consumer choice. The need to employ intentional language on the grounds that there is a level of exposition which is not addressed by the extensional sciences is apparent from the conflation of the levels of analysis in accounts of the competing NBDS hypothesis. Reference to decision-making and other executive functions implies at the very least a level of interpretation over and above those inherent in the basic experimental sciences on which neuroeconomics and behavioral economics rest. Does picoeconomics fulfill the role of providing a cognitive account of behavior that coheres with these sciences and the three imperatives of intentionality?

The acceptability of picoeconomics as an account of cognitive functioning stems from its capacity to generate models that are consonant with the findings of behavioral economics and neuroeconomics. Ross (2012), for instance, proposes four such models:

> *1A. the person is modeled as if "synchronously composed of multiple subagents with conflicting utility functions." The Picoeconomics operations can then be modeled as a Nash equilibrium game among these agents the solution of which leads to a pattern of "personal scale behavior"* (Ross, 2012, p. 719).
>
> *1B. The person is modeled as "synchronously composed of multiple subagents with different time preferences." Hyperbolic time preference results from "competition between steeply exponentially discounting 'limbic' regions and more patient (less steep exponentially discounting) 'cognitive' regions."*

> *2. The person is modeled as "diachronically composed of multiple selves" (each controlling their behavior for a time) "with different utility functions and imperfect knowledge of one another" – but an agent's utility depends on investments by earlier agents.*
>
> *3. The brain is portrayed here as generating behavior that is externally rewarded in the short term though it may attract longer term detrimental effects.*
>
> *(Ross, 2012, p. 720)*

These models can all be seen as ways of accounting for the continuity/discontinuity of behavior by positing interests and actions at the personal level of analysis. Models 1A and 1B do so by portraying behavior in terms of interests (selves, agents) existing either at a single time in a state of conflict over the appeal of earlier or later fulfillment of desires or over the differently perceived utilities of alternative courses of action. Model 2 proposes a sequence of interests each of which holds sway for a period and each of which is represented by a unique utility function the form of which depends on the behavior of preceding agents. 1B captures better than 1A the dilemma of the consumer in situations of actual and potential addiction which is to act sooner or later, though it might be argued that having different time preferences is simply reflective of different utility functions, a consideration which if accepted would conflate these two models. Model 1A might suggest the person *wants* the deleterious long-term consequences of immediate consumption (they are just modeled as an alternative utility function) which is consonant with Becker's economic analysis of addictive behavior in which the addiction and its consequences are a good (bad?) that the consumer demands. 1B might also be supported by neurophysiological evidence and possibly operancy via discounting behavioral economics. Interests must be simultaneously present in order to interact. Therefore, rather than being diachronic, agents should be depicted as appearing synchronously but referring to different time frames. Model 1B also seems superior in capturing the nature of addiction to Model 2 in which no conflict between interests is apparent: interests simply influence each other but avoid the essential component of addiction which is intertemporal conflict. Finally, in Model 3, the brain is modeled as the originator of behavior, acting as a motivating operation that enhances the reinforcement contingent on performance of a specific response. This would harmonize well with Damasio's (1994) somatic marker hypothesis or Rolls's (2008) theory of emotion (for exposition within the economic psychology research program from which the this chapter emanates, see Foxall, 2011). Each delimits the range of cognitive theorizing by proposing only mental operations that are consistent with neural functioning and patterns of behavior observable in circumstances of routine and extreme consumption (Figure 7.1).

Conclusions

1. The domain of psychology is "cognition" (defined broadly to include perception and emotion). This may be exercised by examining cognition itself or by examining the relationship of cognition to the explanation of behavior. This separates psychology from biology and behaviorology, though it remains dependent on both of them for the legitimization and constraint of its theorizing. Biology (via natural selection) and behaviorology (via operant conditioning) are extensional sciences that can employ experimental method to demonstrate the causal basis of behavior. But there are limits to the aspects of behavior they can explain. The gaps have to be met by the use of intentional language and thus intentional explanation (though interpretation is probably a more accurate concept).

2. Two cognitive inputs are required in the current context. The first represents short-term interests and acts to detect rapidly behaviors that will eventuate in consequences that have, in an evolutionary history, tended to increase the biological fitness of members of ancestral species. The second is concerned to provide means of detecting behaviors that will increase the inclusive fitness of the individual's genes. The entails the cognitive functions involved in planning, foresight and decision-making, leading to behaviors that have long-term outcomes that contribute to kin selection. Bundling is a key mental operation in this process.

   It is not sufficient to account for differences in behavior in terms of neurophysiological events alone, especially where these are correlative rather than demonstrably causal, and to add levels of cognitive functioning without a proper rationale to relate neurophysiology, operancy and cognition. This is the role of neurophilosophy.
3. Picoeconomics captures the cognitive level of exposition by showing how these impulsive and executive operations interact to account for behavior. It does so in ways that are consistent with but constrained by what we can say at the neurophysiological and behavioral levels of exposition. In the process, it accounts for aspects of behavior that cannot be explained or predicted from those extensional sciences alone: e.g. by offering an interpretation of the continuity and discontinuity of behavior. In so doing, it does not allude to a realm of nonmaterial explanation but adds a level of interpretation to the theories and findings of extensional science (Dennett, 1969).
4. The unity of the framework that has been advanced is enhanced by the association of each of the three levels of exposition with an appropriate level of economic analysis. The *sub-personal level* which encompasses neuronal activity is the domain of extensional neuroscience and hence neuroeconomics. The *super-personal level* which encompasses operancy, the way in which the rate of behavior is contingent upon its reinforcing and punishing consequences, is the field of extensional behavioral science and hence of behavioral economics in the sense of an amalgam of operant behavioral science and neoclassical microeconomics. The *personal level* which is the domain of persons, their beliefs, desires and feelings is the field of intentional ascription and hence of picoeconomics. Each level of economics contributes to the encapsulation and functional specialty of the cognitive operations proposed (Figure 7.4).

Theoretical component	**Impulsive system**	**Executive system**	**Level of exposition**
Neurophysiology	Limbic	OFC	Sub-personal: Extensional neuroscience
	Neuroeconomics – reward prediciton error		
Intentionality	Affect	Cognition	Personal: Intentional interpretation
	Picoeconomics – cognitive strategies		
Operancy	Immediate reinforcement	Delayed reinforcement	Super-personal: Extensional behavioral science
	Behavioral economics – temporal discounting		

Figure 7.4 Levels of economic analysis relevant to competing neuro-behavioral decision systems

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8

Autobiographical episodes, semantic memories and branding

B. Nilanthi Ratnayake and Amanda J. Broderick

Abstract

Consumer decisions are largely influenced by prior experiences via memory. Consumer research is limited in its consideration of the separate memory systems conceptualization dominant in psychology, and rather has primarily focused on semantic forms of memory. As Autobiographical Memory episodes (AM) may equally affect one's brand consumption decisions, it is critical to integrate episodic AM into brand-related memory studies for a complete understanding of the consumer learning and decision-making process. This chapter conceptualizes affective, self-relevant brand episodes as Brand-Related Autobiographical Memory (BRAM), and storage of abstract brand knowledge as Brand-Related Semantic Memory (BRSM), and investigates the existence of BRAM and BRSM through a neuroscientific approach by utilizing a series of functional Magnetic Resonance Imaging (fMRI) experiments. Findings suggest that physiologically brand memories are stored in AM and SM, and brand memories that are in AM are self-relevant and emotion-laden. The study contributes to marketing theory by identifying the importance of multiple memory systems in understanding consumers' decision-making, exploring how BRAM contributes towards emotional decision-making models and demonstrating the use of neuroimaging (fMRI) methods to study consumer memories.

Key words

Brand-related autobiographical memory, brand-related semantic memory, functional Magnetic Resonance Imaging (fMRI).

Introduction

Memory plays a critical role in influencing consumers' product and brand choice decisions (Lynch and Srull 1982). Memory research across a range of disciplines identifies different systems of memory with differential influences on human behaviour including consumption decisions (Mantonakis, Whittlesea and Yoon 2008; Alea and Bluck 2003; Squire and Zola 1996; Tulving 1995). Squire and Zola (1996) categorize long-term memories into declarative (explicit) and non declarative (implicit) memory based on the brain systems that they support. Declarative

memory is further divided into semantic (factual) and episodic (event) memory. Consumer research has primarily focused on semantic brand memory (Coates, Butler and Berry 2004; Butler and Berry 2001; Sanyal 1992; Nedungadi 1990; Biehal and Chakravarti 1986) and the episodic nature of autobiographical memories on consumer decisions is limited despite the strong influence of autobiographical memories on human behaviour due to distinctive qualities such as self-relevance and emotional nature (Gluck et al. 2005; Baumgartner, Sujan and Bettman 1992; Neisser 1988). This chapter addresses this important gap in the literature by investigating the differential influence of memory systems, with reference to the semantic and autobiographical brand-related memories through a neuroscientific approach by addressing continuous calls for research on emotional brand relationships (Marketing Science Institute 2008; Reed 2002; Shiv and Fedorikhin 1999; Fournier 1998).

Theoretical framework

Theories of human memory systems

Memory is a complex process and has been investigated through multi-disciplinary literature in psychology, neuroscience, social psychology and consumer research. Although early literature considers memory as a unitary system of representations, evolving behavioural and neuroscientific work classifies it into separate sections and systems in the human brain (Welzer and Markowitsch 2005). There is a principal division between short-term and long-term memory (Cowan 2001; Tulving 1995) and an ongoing debate about the diversity of long-term memory systems (Tulving 2002; Kelly and Jacoby 2000). While Tulving (2002) distinguishes between five long-term systems (episodic, semantic, procedural, priming and perceptual), Squire and Zola (1996) and Baddeley, Eysenck and Anderson (2009) divided long-term memory into two major categories: declarative (conscious) and non-declarative (subconscious) systems. The memory classification by Baddeley (2007) (based on the information processing model of memory proposed by Atkinson and Shiffrin 1968) demonstrates a clear view of memory systems and is depicted in Figure 8.1. Understanding different characteristics and functions of each memory system is important in the study because the behaviour of a person may vary based on the information processed and retrieved by each system. This classification may reveal which type/s of memories is more deterministic towards decision-making and influencing human behaviour that can be relevant and related to consumption behaviour including product and brand decisions. As Figure 8.1 depicts, there are three distinct memory systems based on the information processing perspective: sensory memory, short-term memory and long-term memory and each plays a role in brand-information processing.

Sensory memory stores information received from our five senses (eyes, ears, nose, mouth and fingers) and storage of this memory is temporary because these sensations may only last for few seconds and generally disappear in less than a second. If information is retained for further processing, it transfers to the short-term memory (Avery et al. 2010; Baddeley 1997, 2010; Solomon et al. 2006). Short-term memory relies on the attention paid to the elements of sensory memory (Baddeley 1997). In the short-term memory system, information is stored for a limited time duration and its capacity is limited (Avery et al. 2010; Solomon et al. 2006; Cowan 2001). Generally, short-term memory lets a person retain a piece of information for less than a minute and retrieve it during this time (Solomon et al. 2010).

Long-term memory includes both our memory of recent facts as well as our memory of older facts, which have become consolidated (Anderson 2000; Tulving 1991). This memory consists of three main processes that take place consecutively: encoding (a meaning is assigned

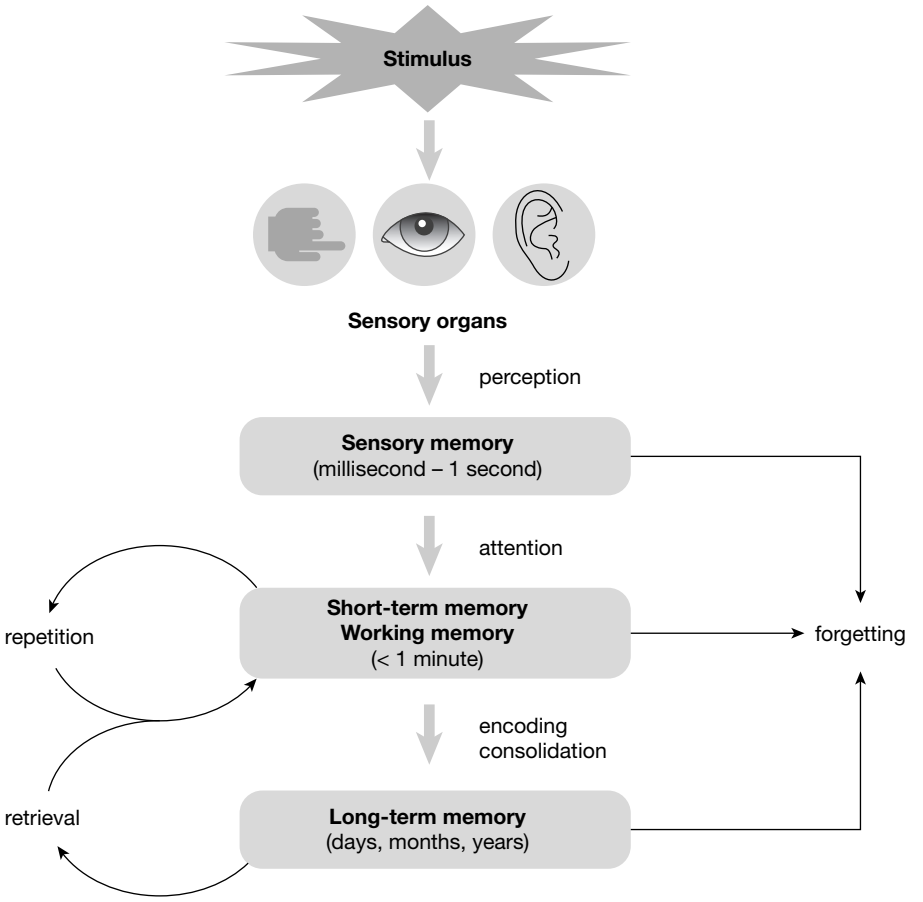

Figure 8.1 Classification of memory systems (Adapted from Baddeley 2007: 3)

to information to be memorized), storage (memories of recent facts and older facts are differentiated and merged where older factors associate with a larger amount of pre-existing knowledge) and retrieval (recall of information). A more comprehensive classification of the long-term memory system was put forward by Squire and Zola (1996). Based on the information processing, long-term memories are mainly categorized into two; declarative and non-declarative, and declarative memories are further classified into episodic versus semantic while non-declarative memories are classified as procedural and emotional conditioning. Although in the actual workings of human memory, these various subsystems are interacting all the time (Baddeley, Eysenck and Anderson 2009), it is important to investigate how information is processed differently in different memory systems to discover which systems are more likely to influence consumer behaviour.

It is possible to distinguish declarative and non-declarative memory systems not only in terms of anatomy, but also in terms of operating characteristics, the kind of information processed, and the purpose served by each system (Tulving 1991). Squire and Zola (1996) and Mantonakis, Whittlesea and Yoon (2008) posited that the key distinction is between the capacity for conscious recollection of facts and events (declarative memory classified into semantic and episodic memory) and a heterogeneous collection of non-conscious learning capacities (non-

declarative memory classified into procedural, priming, associative, as well as non-associative conditioning) that are expressed through performance and that do not afford access to any conscious memory content. This difference between conscious recollection in declarative memories and subconscious features of non-declarative memories set down the direction towards declarative memories because consumer decision-making is essentially based on conscious recollection of prior memories rather than subconscious priming or procedural learning (Warlop, Ratneshwar and Osselaer 2005; Shapiro and Spence 2002; Nordhielm 2002). Thus, two types of declarative memories, semantic and episodic, are relevant to the study of autobiographical memories from a consumption perspective.

Semantic vs. episodic memory

Tulving (1983) distinguished between semantic memory and episodic memory, where episodic memory refers to autobiographical events, and semantic memory refers to context-independent general knowledge of the world (Welzer and Markowitsch 2005). Specifically, the episodic system preserves details of particular experiences and supports remembering tasks of recall and recognition, while the semantic system preserves conceptual and categorical knowledge and supports perception and identification (Tulving 1983, 1985). The primary distinction is therefore between 'remembering', which depends on event-specific information, and 'knowing', which depends on the abstract summary of prior experiences (Mantonakis, Whittlesea and Yoon 2008: 83). A detailed analysis of each system is given below in investigating important differences that may affect consumption decisions.

Baddeley, Eysenck and Anderson (2009) identify semantic memory as the store of knowledge of the world. This is a knowledge base that we all have and much of which we can access quickly and effortlessly. Semantic memory includes meanings of words, only the names of the world's great capitals, social customs, the functions of things, and their colour and odour (Baddeley, Eysenck and Anderson 2009; Martin and Chao 2001: 194). Semantic memory also includes our memory of the rules and concepts that let us construct a mental representation of the world without any immediate perceptions. Its content is thus abstract, relational and is associated with the meaning of verbal symbols (Baddeley, Eysenck and Anderson 2009). Importantly semantic memory is independent of the spatial/temporal context in which it was acquired. Since this is a form of reference memory that contains information accumulated repeatedly throughout our lifetimes, it enables the acquisition and retention of factual information in the broadest sense providing an individual with the necessary material for cognitive operations (Baddeley, Eysenck and Anderson 2009). Tulving (1995) posits that the term 'semantic memory' is merely a 'historical accident', and a better phrase to refer to the function is the general knowledge of the world (ibid.). Thus, this semantic nature of abstract consumption knowledge may be relevant in influencing consumer-buying decisions. This semantic knowledge addresses an important research issue in cognitive or rational decision-making (Shiv and Fedorikhin 1999) because rational decisions are predominantly based on abstract brand knowledge that is free from affective or contextual information, but based on brand attributes and utilitarian benefits.

On the contrary, episodic memory enables individuals to remember their personally experienced past, that is 'to remember experienced events as embedded in a matrix of other personal happenings in subjective time' (Tulving 1985:149). The unique feature of episodic memory is the 'conscious awareness' ('autonoetic consciousness') of past happenings and this awareness is different from perceptual experiences, imagining, dreaming, solving of problems and retrieval of semantic information (Tulving 1985). The most distinctive feature of episodic

memory is that one sees her/his self as an actor in the events, and therefore memorizes not only the events themselves, but also the entire context surrounding them (Baddeley, Eysenck and Anderson 2009; Mantonakis, Whittlesea and Yoon 2008). An episodic memory has the phenomenal characteristic of referring to something that happened once at a specific time and place. But the specific identification of time and place does not seem to be necessarily part of episodic recall, although adults can often reconstruct an episodic memory from different types of cues, and find ways to identify a specific time and place at which a specific event was experienced, even if the location is not available in declarative form (Nelson 1993).

In consumption decisions, this episodic nature of prior experiences may have a strong influence due to the rich contextual details existing in consumption memories compared to the abstract information existing in semantic memories. Thus, it is important to investigate what sort of episodic memories are more influential in human behaviour so that those memories can be equally important in consumption decisions as well. In particular, the episodic nature of autobiographical memories was found to have a strong influence on our behaviour (Gluck et al. 2005; Bluck and Gluck 2004; Neisser 1988) and therefore the following sections discuss the nature and functions of this autobiographical memory system, which may be influential in buying decisions.

Autobiographical Memory (AM): Qualities and functions

Autobiographical memories (AM) are defined as 'specific, personal, long lasting, and (usually) of significance to the self-system or as forming one's personal life history' (Nelson 1993: 8). This is also known as personal memory (Brewer and Pani 1983) or self-defining memory (Blagov and Singer 2004; Conway 1990; Fivush 1998; Brewer 1986, 1988). Conway, Pleydell-Pearce and Whitecross (2001: 494) emphasize that 'autobiographical remembering is a dynamic process extended in time and is present in particular brain regions at different periods during memory construction'. It is important to note that the qualities and functions associated with AM are relevant and influential in consumption behaviour.

Robinson and Swanson (1990) identified three distinctive qualities of AM: feeling belongingness, phenomenal re-experiencing and memory perspective. First, the personal quality of memories is one of the most basic phenomenal features of autobiographical recall or feeling belongingness. Second, in autobiographical recall, we often re-experience the original episode through the extent of vividness and this re-experiencing varies greatly. If the contents of consciousness are sufficiently vivid, we are meant to be reliving the experience. Subjective certainty about recall is highly related to the level of visual imagery experienced. Other modalities (e.g. auditory, tactile and affective) of re-experiencing are related to subjective certainty in varying degrees. Accuracy of recall was positively correlated with reported levels of re-experiencing. Third, when remembering an event, a person may visualize it as a field of view as in normal perception, an outside observer would be 'seeing' the self engaged in the activity being recalled. Several have stated that the image they experience is more like a template than an accurate depiction of themselves in the context of the remembered event. These different qualities of AM facilitate a person to perform different functions in society including consumption, and therefore functions of AM discussed below can be considered as consequences of AM.

Nelson (1993), Fivush and Reese (1992), Pillemer and White (1989) and Neisser (1988) discussed the importance of social function of autobiographical memories and Gluck et al. (2005) posited functions of AM under three main broad categories; directive (planning for present and future behaviours), self (self-continuity, psychodynamic integrity), and

communicative (social bonding) functions. The directive function of AM involves using the past to guide present and future thoughts and behaviour in a number of ways; to solve problems, to develop opinions and attitudes (Pillemer 1998; Cohen 1989), to ask new questions (Lockhart 1989; Baddeley 1986) and to guide present or future behaviour through the lessons learned in the past (Bluck and Gluck 2004; Pratt et al. 1999; McCabe, Capron and Peterson 1991). The self-function of AM has received the most emphasis in the extant studies of AM (Bluck and Levine 1998; Brewer 1986) because knowledge of the self in the past and as projected into the future has been seen as a critical type of self-knowledge (Neisser 1988). Conway and Tacchi (1996) claims the adequacy of autobiographical knowledge depends on its ability to support and promote continuity and development of the self. Similarly, a hypothesized function of the personal past is to preserve a sense of being a coherent person over time (Barclay 1996). Fivush (1998) also described how this coherent sense of self develops in young children, and has extended the importance to describe the emergence of the life story in adolescence (Habermas and Bluck 2000; McAdams 1985). Self-functions such as emotion regulation (Pasupathi 2003) and self–concept preservation/enhancement (Wilson and Ross 2003), have been suggested as normative and useful aspects of self-regulation across adulthood (Cohen 1998).

The importance of AM in developing, maintaining, and nurturing social bonds has been very prominent (Pillemer 1998; Nelson 1993). The basic social function AM serves as a way to provide material for conversation that facilitates social interaction (Cohen 1998). As Pillemer (1992) posits, sharing personal memories makes one's contribution to conversations more believable, persuasive and may allow a person to better understand and empathize with others (Cohen 1998). Providing others with information about one's self is another function that memory serves in initiating new social relationships (Cohen 1998). Memories can also be shared with those who did or did not take part in the remembered event and sharing such AM with someone who was not present provides the listener with information and this can serve an intimacy or bonding function (Fivush, Haden and Reese 1996). Taken together, qualities and key functions demonstrate the organization, manifestation and consequences of AM that are important and relevant in product/brand-related consumption situations.

Autobiographical Memory (AM) vs. Semantic Memory (SM)

As discussed above, remembering autobiographical experience is in direct contrast to the experience of 'knowing of' an event, which is more semantic in nature than episodic (Tulving 1983, 1985). Because autobiographical events can be traced back in time, tightly specific to their original context, time and place (Tulving and Markowitsch 1998), these AM can be more influential towards consumer purchase decisions in comparison to semantic memories. In other words, when one recalls information from AM and makes judgements, the outcome may be different from the judgements made by recalling SM due to the information intensity and affect associated with AM in comparison to the SM.

Extant studies considering AM and SM in the areas such as psychology, medicine, and sociology show distinct differences among these two memory systems. The differences include storing, processing, and retrieval of information in memories resulting in different behavioural outcomes as summarized in Table 8.1 below. Importantly, when AM are recalled, emotions experienced at the time of the event influence subsequent behaviour whereas in SM such influence is not evident. Thus, in this study, consumer memories have been investigated to elaborate and relate this phenomenon in brand-related consumption decisions.

Table 8.1 Studies of AM and SM

Author	*Focus of the study*	*Definition*	*Function/outcomes*
AM			
Welzer and Markowitz 2005	An integrative approach to the phenomena of memory and reminiscence based on current theories from the social, cultural and biological sciences.	AM are emotional, self-reflective memories.	Emotions play an important role in evaluating events.
Pernot-Marino, Danion and Hedelin 2004	Whether conscious recollection for AM is influenced by the emotion experienced.	The subjective experience of reliving a personal event mentally.	At the time of AM retrieval, behaviour is influenced by emotions experienced.
Addis and Tippett 2004	Assessed the status of AM and identity.	AM contributes to trait self-knowledge and to self-narratives, enabling the integration of past and present selves and contributing to the sense of identity.	Childhood and early adulthood AM influence on strength and quality of one's identity.
Alea and Bluck 2003	Provides a conceptual model of social function of AM.	Memories for specific events, life periods and domains.	AM influences social functions such as relationship development and maintenance.
AM and SM			
Olson et al. 2010	A case for a calendar savant with episodic memory impairments.	Poor episodic memory is supplemented by using calendar information.	Individuals can have strong SM but with impaired AM.
Ryan et al. 2008	Compare category production and category cued recall during episodic and SM retrieval.	Category production is considered a classic tool for evaluating SM.	AM helped individuals to generate SM (category exemplars).
Mantonakis, Whittlesea and Yoon 2008	Separate systems approach to memory.	AM –remembering SM –knowing	Result in recall and recognition. Result in perception and identification.
Burke and Mackey 1997	Highlight theoretical and practical implications of memory, language and learning.	AM - Ability to remember specific events situated in time and place. SM - Store of knowledge and skills and associated to the language.	Old adults were able to remember the knowledge in SM while they failed to recall AM episodes.
SM			
Hornberger et al. 2009	Judgments of semantic memory with patients impaired in Alzheimer's disease.	Store of every-day knowledge about the meanings of words and objects.	Fail to retrieve semantic tasks.

Table 8.1 continued

Author	*Focus of the study*	*Definition*	*Function/outcomes*
Nessler et al. 2006	Brain activity in young and elderly persons during low and high-selection versions of a semantic task.	Knowledge about the world.	Semantic retrieval reduces subsequent episodic recognition and memory performances are inconsistent with age.
Thompson-Schill 2002	Representation, organization and retrieval of SM.	General knowledge of concepts and facts.	Frontal cortex contributes to semantic retrieval of concepts and facts (for problem solving).

Brand-related consumption memories

The AM and SM conceptualization of memory systems can be successfully applied to brand-related memories or prior consumption experiences. Literature posits that brand experiences can be formulated through a range of drivers such as: physical, functional, and emotional brand attributes (Kotler and Keller 2006; Plummer 2000; Biel 1992); brand personality characteristics (Aaker 1997, 1999); nostalgic experiences (Sierra and McQuitty 2007; Goulding 1999); and brand heritage (Simms and Trott 2006; Batra and Homer 2004; Plummer 2000; Aaker 1996). These brand associations can be stored in consumer memory in two ways as per the conceptualization of AM and SM. Consumers may only 'know' about the brand. In other words, consumers may be aware that these brands exist in the marketplace and they are knowledgeable about their attributes, benefits and characteristics through their brand experiences. These associations are primarily factual or abstract information that would be stored in the semantic memory as episodic content of such information has not been processed and stored in the SM. These brand memories can be conceptualized as Brand-Related Semantic Memories (BRSM). In parallel, brand-related significant personal experiences such as birthday celebrations, weddings, holidays may be stored as episodes in AM with contextual and affective details, which is conceptualized as Brand-Related Autobiographical Memories (BRAM).

Although the majority of studies do not explicitly conceptualize memory into the semantic and autobiographical systems, Table 8.2 clearly demonstrates the dominance of memory studies in consumer research based on factual information about brand decisions signifying that consumer research has previously focused on brand-related semantic memory. From the perspective of memory-based decisions, these decisions derived from recalling BRSM deal with cognitive-based conceptual knowledge whereas BRAM may deal with emotional dimensions and self-relevance in decision-making situations. This memory conceptualization is important in the recent debates in consumer behavioural studies because behavioural decision theory has predominantly focused on cognitive aspects of decision-making without exploring its emotional dimensions (Kahnemen 1991) and, therefore, contrasts actual choices to predictions derived from rational models. Despite the predominance of brand-related semantic memory study (BRSM), by investigating the episodic and affect associated brand-related autobiographical memory (BRAM), we can extend our psychological understanding of memory systems into a consumer brand decision context addressing both rational and emotional decision-making models.

Table 8.2 A classification of consumer memory studies

Study	*Focus of the study*	*Defined memory*	*Outcome/Effects*	*Category*
Noel 2006	The relationships between repetitions of brand attribute associations and recall.	The greater the memory of a brand name, greater the likelihood that the brand enters into the consideration set.	Repetition of brand attributes increase greater recall.	BRSM
Warlop, Ratneshwar and van Osselaer 2005	Consumer experiential learning from a memory perspective.	Memory representation of a brand typically include many associations such as product category, consumption benefits or semantic associations.	Extrinsic cues such as brand names and packaging increase product evaluations.	BRSM
Baker 2003	Explores the concept of brand name imprinting (i.e. creating and strengthening the brand name in brand memory network).	The activation of brand name facilitates the conscious retrieval of brand information.	Brand name imprinting facilitates consumers to retain brand information in memory.	BRSM
Shapiro and Spence 2002	Relative effect on sensory attributes and market information on brand choice.	Encoding and retrieving product attributes.	Providing evaluative criteria for sensory attributes enhance brand choice.	BRSM
Nordhielm 2002	Repetition of features of a stimulus and response judgements.	Semantic content of a feature is processed.	Relationship between exposure frequency and effective response is mediated by the level of information processing.	BRSM
Kardes and Kalyanaram 1992	Effects of order of entry on consumer memory and judgements.	Consumers learn more about early brands than followers.	Order of entry effects consumer memory and judgement.	BRSM
Nedungadi 1990	The role of memory in determining the nature of brands considered during choice and subsequent variability in the final probabilities of brand choice.	Memory organization shapes brand retrieval, determines the nature of the consideration set and influences brand choice.	For a brand to be selected in memory-based choice, the consumer must recall that brand.	BRSM
Burke and Srull 1988	Memory inferences in advertising context.	Individuals mentally compare attributes of various brands.	Repetition has a positive effect when there is no or little advertising for similar products.	BRSM
Biehal and Chakravarti 1983	How learning goals and task structure effect retrieval of product information and choice process.	Memory content and organization is influenced by learning goal and the structure of the task environment.	Learning goals and information formats moderate information processing and choice.	BRSM

Table 8.2 continued

Study	*Focus of the study*	*Defined memory*	*Outcome/Effects*	*Category*
Braun-LaTour, Latour and Zinkhan 2007	Using childhood memories to gain insight into brand meaning	AM provides marketers with memory stories that can be a projective tool for understanding consumers' thoughts and feelings about a product or brand.	AM influence on current and future preferences across the consumer life cycle.	BRAM
Braun, Ellis and Loftus 2002	Advertising influence on past memories	Autobiographical referencing leads to the creation of false or distorted memory	Autobiographical referencing influences consumers' recollections, and the ads build their memory.	BRAM
Adaval and Wyer 1998	The role of narratives in consumer information processing.	Memory consists of stories that they construct from their personal and social experiences.	AM memory narratives are more influential than SM.	BRAM
Menon, Raghubir and Schwarz 1995	The importance of memory-based episodes or summary rates of occurrence, and context-based information on behavioural judgements.	Respondents retrieve individual episodes of behaviour when formulating frequency judgements.	When memory-based information is accessible and diagnostic, contextual information is not used; when memory-based information is accessible but not diagnostic, the use of contextual information depends on its perceived diagnosticity.	BRAM
Sujan, Bettman and Baumgartner 1993	Affective nature of AM and brand judgements.	AM are self-reflective and effective.	Ads that encourage the retrieval of AM increase level of felt affect and reduce processing of product attributes.	BRAM
Baumgartner, Sujan, and Bettman 1992	Consider the role of consumer's AM in information processing.	AM episodes differ from self-schema cognitive structures that contain abstract knowledge.	When AM are evoked, reduction in product information analysis and influence on ad/product judgements.	BRAM

Neural correlates of memory: Differences between BRAM and BRSM

There is physiological evidence of differences in information processing in AM and SM. The functional neuroimaging methods have identified the brain regions associated with AM as the middle temporal and temporopolar areas, and the dorsal prefrontal cortex (Steinvorth, Corkin and Halgren 2006; Graham et al. 2003; Maguire, Vargha-Khadem and Mishkin 2001). Recent work has demonstrated that semantic knowledge involves a dynamic interaction between storage of conceptual information (content) and active manipulation of this knowledge in service of a task (process) (Koenig and Grossman 2007; Martin and Chao 2001). This semantic information processing is associated with activity in the lateral prefrontal cortex connected with the medial temporal lobe and posterior association cortices (Kuchinke, Meer and Krueger 2009; Denkova 2006). The hippocampus and medial temporal lobe activation relates to both AM and SM (Manns, Hopkins and Squire 2003). Markowitsch (1998a) suggested that the recollection of old personal events depends on a right-sided network formed by the ventrolateral prefrontal and temporopolar cortices, while posterior areas store the multimodal representations, namely visual images, sounds, smells, and other sensory components associated with one's life experiences (Denkova 2006).

Thus, physiologically, we are able to identify and differentiate AM and SM. Based on this conceptualization, one may posit that brand information may be stored differentially in one or both of two memory systems; BRSM and BRAM, and that this distinction will be expressed physiologically in different brain regions: brand-related affective-laden episodes in regions associated with AM activation, and factual brand knowledge in regions associated with the areas of SM activation. Importantly when AMs are retrieved, consumers often pay less attention to semantic information such as product attributes and other product evaluation attributes (Baumgartner, Sujan and Bettman 1992) and are more responsive to advertisements that contain autobiographic referencing (Krugman 1965). Specifically, the three functions of AM significantly influence one's daily life endeavours (Alea and Bluck 2003) and thus may equally affect one's brand consumption decisions. Thus integrating AM into brand-related memory studies is critical to an understanding of consumer learning and decision-making processes in addition to the SM (Mantonakis, Whittlesea and Yoon 2008), proposing the proposition below.

Proposition 1: Brand-related memories will be predominantly represented in either AM or SM

The self-relevance of AM is the most significant feature that separates AM from other types of memory systems (Brewer 1986). Conway and Tacchi (1996) and Robinson (1986) have posited that AM and the self are essentially related. Personal memories of this nature affect current life satisfaction as memories have the capacity to affect people's emotions and satisfaction levels. This reflects the fact that life satisfaction improves when people recall pleasant memories and the opposite results when they remember unpleasant events (Wilson 2000; Tversky and Griffin 1991), supporting Wilson and Ross's (2003) argument of the reciprocal relationship between AM and self-identity. People also process information as narratives and communicate stories of their autobiographical memories to satisfy motives and goals (Baumeister and Newman 1994; Conway 1990).

According to Conway, Singer and Tagini (2004), AMs are distinct for three main reasons: they (1) contain episodic memories; (2) contain self-knowledge; and (3) are the result of goal processing. Because AM consists of self-relevant knowledge, when AM are retrieved, it may be very likely that self-relevant areas of the brain will be activated in comparison to SM. Conway and Pleydell-

Pearce (2000) in defining self-memory systems (SMS) posited a relationship of AM to the self, whereas this relationship has not been evidenced in SM. In the same vein, Crane, Barnhofer and Williams (2007) discovered that information retrieval from AM was greater in self-relevant cues. Also neuroscientific studies related to AM appear to be selectively engaged in tasks that involve self-referential processing operations (Johnson et al. 2002; Kelley et al. 2002; Gusnard et al. 2001; Craik et al. 1999) in the areas of prefrontal cortex, particularly the medial prefrontal cortex (Macrae et al. 2004). Therefore, it is suggested that BRAM retrieval results in the activation of self-construal areas of the brain, and hence the following proposition is arrived at.

Proposition 2: Physiological activation of self-construal brain functions will be greater in BRAM retrieval than BRSM

Extant neuroimaging studies have discovered areas of activation upon people's feeling and emotions. Different degrees of emotional weighting are allocated to different areas and systems in the tissues of the brain. The structures mostly and directly concerned with processing strongly emotional information are in regions of the limbic cortex and ventromedial prefrontal area (Markowitsch et al. 2003; Markowitsch 1998a; Fink et al. 1996). Greene et al. (2001) and Maddock (1999) discovered that areas such as medial frontal gyrus, posterior cingulate gyrus and angular gyrus are significantly associated with emotion. Adolphs et al. (2000) investigated the activation areas for emotions such as sadness, happiness, anger or fear, and these activations were evidenced in the areas of left insula, right posterior cingulated area and the left cingulated area although the activation pattern is remarkably distinct between sadness and happiness. In the study of Keightley et al. (2003), brain activity associated with the emotional processing of faces and pictures occurred in brain regions such as amygdala, insula, prefrontal cortex and anterior cingulate and is consistent with various emotional processing paradigms. As AM stores affect-laden memories about lifetime events, it is expected that when BRAM are recalled, areas associated to the emotional response are activated in the brain, and therefore arrive at the following proposition.

Proposition 3: Physiological activation of affect-associated brain functions will be greater in BRAM retrieval than BRSM

Thus, the two objectives of the study are: to investigate the neural response to brand-related memory, whether brand-related memory activates the regions of autobiographical memory and/or the regions of semantic memory; and whether the brand-related AM activates areas of emotional sensitivity and self-construal components.

Methodology

Recent studies evidence the successful application of fMRI to investigate the neural correlates of brands in different cognitive responses: brands act as cultural symbols and activate in the prefrontal cortex (Schaefer et al. 2006; McClure et al. 2004); reward-related brands in the ventral striatum (Erk et al. 2002); personally favourite brands in the dorsolateral prefrontal cortex (DLPFC) and hippocampi (McClure et al. 2004); behavioural preferences to brands in the areas of ventrimedial prefrontal cortex (VMPFC) (ibid.) and prestigious self-relevant brands in the area of anterior medial prefrontal cortex (AMPFC) (Schaefer and Rotte 2007a, b). These studies evidence the successful use of fMRI in investigating brand-related behaviour, and justify the use of this technique in the examination of BRAM and BRSM.

Participants

Eighteen healthy volunteers (eight males and ten females) participated in the study. Their mean age was 26 years, and their mean number of years' education was 17. Participants had to be at least 18 years old in order to obtain a sufficient number of consumption experiences, and younger than 40 years to ensure vividness of autobiographical memories, which are likely to become semanticized with increasing age (Levine et al. 2002). All participants were British, native English speakers, and the sample was recruited through a judgemental sampling procedure from the volunteer pool of Durham University's Psychology Department. All procedures were approved by the Durham University Research Ethics Committee and the Newcastle Magnetic Resonance Centre where the scans were conducted.

Task design and procedure

The experiment was planned in two phases: a pre-scanning survey and the fMRI experiment.

Stage 1: Pre-scan survey

The pre-scan survey was implemented one month before commencing the fMRI experiment, and objectives of the experiment were to select the brand stimuli for the fMRI experiment, to determine the face validity of the stimuli, in terms of the potential degree of AM and SM association and to ascertain the memory intensity of AM and SM associated brands. The questionnaire elicited four categories of brand stimuli: (1) respondent-identified brands that have AM associations based on the predefined conceptualization of specificity in AM (uBRAM) (Blagov and Singer 2004; Rubin, Schrauf and Greenberg 2003); (2) respondent-identified brands that were AM associated within three product categories (cars, clothing and personal care) (pBRAM); (3) the top six brands, in terms of market share, were presented to respondents in each of the above three product categories representing different categories of Baumgartner's (2002) consumer personology cube, to identify SM association of consumer knowledge (BRSM); and (4) six low-penetration brand names were presented based on the same product categories (non-UK brands) to control for brand awareness (NOME). Brand preference data were also collected.

Stage 2: fMRI Experiment

Task Design and Procedure

The goal of the experiment was to examine the difference between four memory conditions (uBRAM, pBRAM, BRSM and NOME) in order to test the relevant propositions. The block design was more appropriate for the purpose of the study because the design enabled multiple brand trials of the same condition and switching back and forth between experimental conditions (uBRAM, pBRAM and BRSM) and the control condition (NOME). This block design was not a traditional block design because there was only one trial per block. It was a block design because the trials were too long to be considered an 'event', i.e. they lasted more than a couple of seconds.

In the stimuli paradigm, each brand name appeared in the centre of the screen, in a sans-serif font (Verdana), with a point size of 20. Immediately below each brand name, the brand category appeared in brackets. The category labels 'cars', 'clothes' and 'personal care' were used for pBRAM, BRSM and NOME conditions (conditions 2 to 4), and similarly general labels (e.g.

electronics) were used for the uBRAM conditions (condition 1). In task piloting, these labels were found to assist in disambiguation of context where related brand names were given in different conditions. Each of the 24 brand names (6 brands for each condition) were displayed for 15 seconds (in random order), followed by a fixation cross for 4 seconds, producing a stimulation paradigm of 7 minutes and 36 seconds. These timings were based on prior fMRI neuromarketing studies by Schaefer and Rotte (2007a, b).

Participants were instructed that they would be presented with some brand names and that for each one they were to think about the associations and images in their memory that related to it. To keep participants 'on-task', they were asked to identify what kind of memory they had for each brand name (i.e. lifetime personal memory, attributes of the brand and no or little memory). Using the MRI-compatible fibre-optic response box held in their dominant hand, half of the participants had to press the fourth finger (ring finger) button for no or little memory, the third finger (the middle finger) button if their memory was of the product attributes (SM trials), and the second finger (the index finger) button for a lifetime personal memory. These response button codings were reversed for alternate participants. In between brand names, they were advised that they would see a cross, and that they were to continue to concentrate on their brand memory until the cross appeared. Then they were to fixate on the cross until the next brand name appeared. Stimuli were presented using e-prime (v2.0.8.22; http://www.pstnet.com/eprime.cfm) on a standard PC, with a Radeonx1300pro graphics card. A Canon XEED SX6 projector projected stimuli onto a back projection screen, viewed by participants via a front silvered mirror placed at a 45^0 angle above the head coil. As in prior neuromarketing studies (Schaefer and Rotte 2007a, b; Schaefer et al. 2006) to increase power given the relatively low number of trials in each condition, the task was repeated three times for each participant, using a new random trial order each time. Unlike a longer single paradigm, this approach gave participants a short rest between the repeats.

fMRI data collection

Blood oxygenation level dependent (BOLD) contrast images were acquired on a 3TPhillips InteraAchieva MRI system (http://www.healthcare.philips.com/in/products/mri/systems) using the integrated RF body coil for transmission, signal detection through an eight-channel SENSE head coil, and SofTone noise reduction. To limit head movements, the area between the participants' heads and the head coil was padded with foam, and participants were asked to remain as still as possible. Snugly fitting standard Phillips headphones dampened background scanner noise. Thirty-four 3-mm slices (with a .75mm gap in between) were acquired in the transverse plane in parallel with the pons-tentorium line, with an in-plane resolution of 3 mm^2 over an FoVof 192 mm^2, thereby creating voxels of 3mm x 3mm x 3.75mm. The sequence incorporated a 30-ms TE, and an EPI factor of 53. Parallel acquisition was deployed using SENSE with an acceleration factor of 1.3, resulting in a 1950.7-ms TR. Two hundred and thirty-seven volumes (dynamics) were collected across each run, with a total scan time of just over 7 minutes 42 seconds each. The remaining 6 seconds of scanning after the stimuli finished were occupied by an instruction screen, advising participants to remain still and await further instructions. At the beginning of neuroimaging data collection, the first radio frequency pulse triggered E-prime to begin displaying stimuli, thus synchronizing stimulus presentation and data collection. Anatomical data were collected in the same orientation and plane as the functional data using an MP-RAGE single-shot T1-weighted sequence, with 150 mm–1.2 mm slices through the brain (in-plane resolution .87 mm^2). This sequence incorporated a TR of 9.6 ms, a TE 4.6 ms, and again employed SENSE.

FMRI analysis strategy

The neuroimaging data from the task were analysed according to the standard procedures, using SPM8 (running in Matlab R2011a;http://www.mathworks.com), with all updates up to revision 3684 (http://www.fil.ion.ucl.ac.uk/spm/). These analyses sought to determine the location of brain regions associated with the task, the intensity of activity in that region (statistical probability of occurring by chance), and its spatial extent. For each participant, data were first spatially realigned to the first image in the series using an automatic sum of squares minimization algorithm. No participant displayed more than a millimetre of movement or a degree of rotation from the reference image. Thus no datasets had to be discarded because of excessive within-scan movement confound. Stereotactical normalization to the Montreal Neurological Institute template accounted for neuroanatomic variability and facilitated subsequent localization with standard brain atlases. Finally, data were smoothed using a Gaussian kernel with a FWHM of 8 mm to increase the signal-to-noise ratio according to the matched filter theorem.

After completing the pre-processing of images, a design matrix is constructed at the individual level (first level) to convolve the experimental design with a haemodynamic response. Then the data were specified and modelled at the group level before making relevant inferences. In the first level modelling, individual response timings were used to design the matrix in which each mini-block lasted until the time point at which each participant typically made his or her mean response for that stimuli category. Fixation trials were modelled implicitly as a rest or baseline condition. Each of the three runs per participant was modelled separately to account for subtle session-specific fluctuations in operation of the MRI scanner. All 18 participants' data were used separately to construct the first level model.

In the second level analysis, F-contrasts necessary to test for these effects within-subject level (i. e. first level) were fed into a general linear model that implements a statistical T-test. Here there were four sets of contrast images, uBRAM, pBRAM, BRSM and NOME. These contrasts generate the contrast images for a between-subject analysis or on the second level analysis, so that it can be examined whether there is a significance increase or significant decrease in a specific contrast between conditions (directional).

All 18 participants' data were then used to construct a single fixed-effects, 'first-level' model with each participant's data partitioned separately. This fixed-effects model was estimated with proportional scaling over each run, a high pass filter of 128 s, and correction for serial autocorrelations. Following estimation of this model against the neuroimaging data, 'within-memory type' contrasts were performed to isolate the patterns of regional brain activation associated with four manipulations of brand-related memory (uBRAM, pBRAM, BRSM and NOME). Finally, the Yale non-linear MNI to Talairach Coordinate Converter (http://www.bioimagesuite.org/Mni2Tal/index.html) was employed to transform the MNI coordinates produced by SPM back to Talairach space (http://www.talairach.org/about.html) to enable neuroanatomical localization according to this atlas (Talairach and Tournoux 1988).

The overall hypothesis was that brand-related memories are not mediated by a single neural system. According to the literature reviewed, the prediction is that separate systems can be disassociated, depending on whether the brand-related memory is AM or SM based. By careful examination of the type of brand-related memory, it is sought to determine whether different brand-related memories can be separated in previously identified neural networks for AM versus previously identified neural networks for SM.

Results and discussion

Final neuroimaging results are summarized and shown below in Table 8.3. These results are used in investigating propositions 1, 2 and 3. Table 8.3 summarizes regional brain activation data associated with the four main conditions, i.e. the four brand memory types vs. the rest (baseline) condition (within-memory type) contrasts. In these results, statistical probability values are uncorrected, but are at a more conservative $p < .001$ threshold (vs. the typical $p < .05$). A spatial contiguity threshold of 20 active voxels (Forman et al. 1995) was also employed to help attenuate false positives further. Coordinates are summarized in the standard stereotactic space defined by the Talairach and Tournoux (1988) atlas.

Table 8.3 Regional brain activity during the unprompted AM (uBRAM), prompted AM (pBRAM), SM conditions (BRSM) and no memory conditions (NOME) – ('within brand-related memory type' contrasts)

Brain region	*Brodmann's Area*	*Hemisphere*	*Z-score*	*Talairach coordinates*
uBRAM				
Thalamus		Left	5.08	-20 -22 12
Precuneus	7	Left	4.79	-2 -66 34
ParaCentral Lobule	5	Left	4.71	-15 -16 45
Inferior Frontal Gyrus (ventrolateral prefrontal cortex)	44	Left	4.47	-43 3 19
(Anterior) Cingulate Gyrus	32	Midline	4.03	0 38 12
(Mid) Cingulate Gyrus	32	Right	4	23 26 32
Thalamus		Right	3.85	11 -9 1
Precuneus	19	Left	3.68	-27 -55 47
pBRAM				
(Retrosplenial) Cingulate Cortex	29	Left	4.64	–8 -40 7
Inferior Frontal Gyrus (ventrolateral prefrontal cortex)	45	Left	4.39	-29 23 19
Superior Temporal Gyrus	21	Left	4.17	-51 -15 0
Inferior Frontal Gyrus	45	Left	4.49	-29 15 19
Middle Frontal Gyrus (dorsolateral prefrontal cortex)	9	Right	4.36	27 9 38
Precentral Gyrus	6	Right	4.09	40 -2 12
(Mid) Cingulate Gyrus	24	Right	3.86	3 -6 32
Inferior Parietal Lobule	40	Right	3.57	33 -40 35
Postcentral Gyrus	2	Right	3.35	41 -20 30
BRSM				
Precuneus	7	Left	5.23	-9 -66 34
(Retrosplenial) Cingulate Cortex	30	Right	5.22	9 -39 15
Thalamus		Left	4.99	-11 -17 7
(Anterior/Mid) Cingulate Gyrus	32	Right	4.62	20 29 29
(Mid) Cingulate Gyrus	24	Left	4.51	-23 8 34
Medial Frontal Gyrus	6	Right	3.98	18 -6 53

Brain region	*Brodmann's Area*	*Hemisphere*	*Z-score*	*Talairach coordinates*
NOME				
Middle Frontal Gyrus (dorsolateral prefrontal cortex)	9	Left	5.08	-26 9 37
(Anterior) Cingulate Gyrus	33	Left	4.11	-23 16 21
Lateral Sulcus		Left	4.1	-23 -10 22
Superior Temporal Gyrus	21	Left	4.82	-45 -15 0
Cuneus	19	Left	4.44	-6 -66 32
Middle Frontal Gyrus	6	Right	4.23	23 -6 55
Precuneus	7	Right	4.19	30 -43 32
(Anterior/Mid) Cingulate Gyrus	32	Right	4.12	20 29 27
(Lateral) Globus Pallidus (basal ganglia)		Left	3.96	-15 0 -1
Thalamus		Right	3.73	8 -11 1
(Posterior) Cingulate Gyrus = visuospatial	23	Midline	3.39	0 -53 15

All areas were significant to $p < 0.001$ uncorrected. L = left, R = right, M = midline. Coordinates are given for the stereotactic space of the Talairach Atlas.

Rendered 3-dimensional brains depicting BOLD response patterns from the 'within brand-related memory type' contrasts are shown in Figure 8.2. The four memory conditions in Figure 8.2 are (a) Unprompted AM (vs. rest) – uBRAM; (b) Prompted AM (vs. rest) – pBRAM; (c) Semantic memory (vs. rest)-BRSM and, (d) No memory (vs. rest) – NOME activations are presented. The colours indicate the intensity of activity in that brain region, white indicating the most intense activity, through grey, to black, which indicates the least intense activity.

Figure 8.2 demonstrates activation of brain areas in all four conditions (uBRAM, pBRAM, BRSM and NOME) and most intense activation can be seen in the uBRAM condition compared to the pBRAM condition. BRAM activation is evidenced in the areas thalamus, precuneus, inferior frontal gyrus (ventrolateral prefrontal cortex), cingulate gyrus, inferior frontal gyrus, cingulate cortex and middle frontal gyrus (dorsolateral prefrontal cortex) while BRSM activations can be seen in precuneus, cingulate cortex, and medial frontal gyrus.

Although BRSM activations are seen in the relevant SM areas, it is not intense as in BRAM, and the control condition with no or little brand memory (i.e. NOME) depicts weak activation in AM–SM associated brain regions in comparison to BRAM and BRSM conditions. Thus, we can arrive at the conclusion that, when brands are AM-related, relevant brain regions are activated intensively in comparison to when brands are associated with SM. Although there are large overlaps in the different networks, BRAM and BRSM can be distinguished neuroanatomically.

Representation of brand-related memories in AM and SM

As per Table 8.3, both uBRAM and pBRAM conditions were associated with activation of ventrolateral prefrontal cortex, middle frontal gyrus, dorsolateral prefrontal cortex and cingulate cortex areas that are consistent with the previous studies of AM activation (Burianova and Grady 2007; Steinvorth, Corkin and Halgren 2006; Maddock, Garrett and Buonocore 2001; Fink et al. 1996). The inferior frontal gyrus, middle frontal gyrus, and the thalamus was observed during

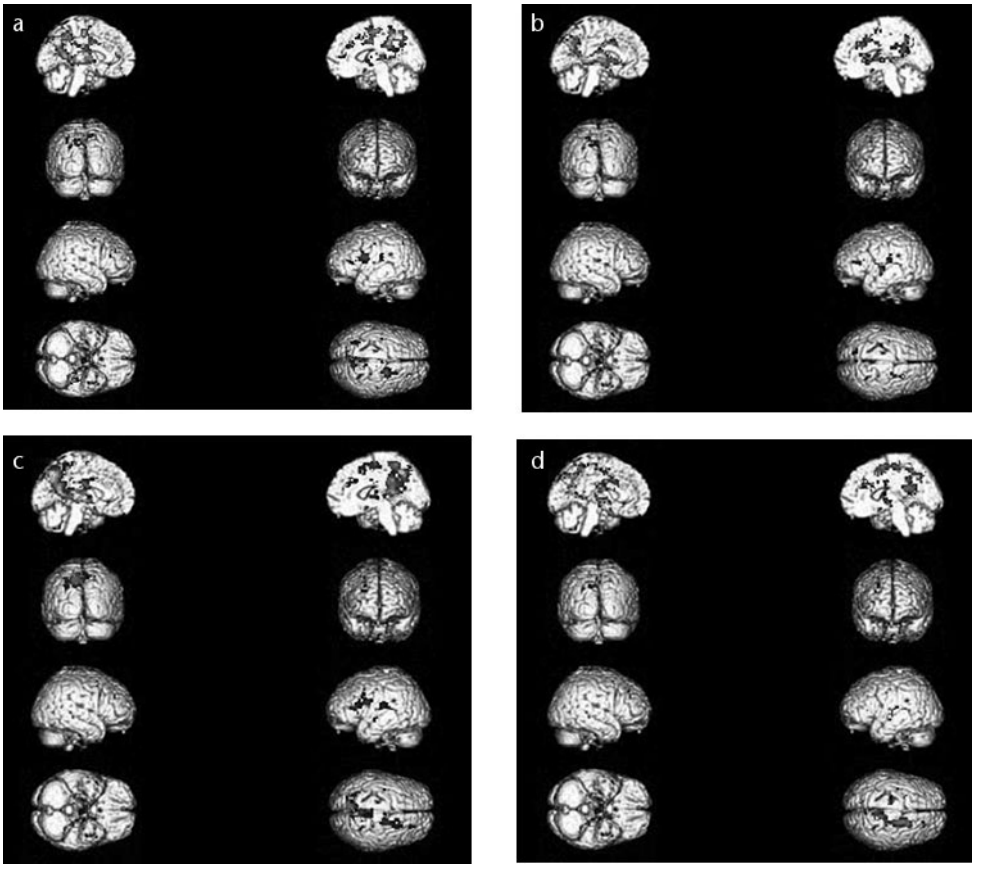

Figure 8.2 Brand memory activation in human brain in four memory conditions (Top-left = view from the front of the brain; top-right = view from the front; mid-left = view from the right hand side; mid-right = view from left; bottom-left = view from underneath; bottom-right = view from above). Included in Figure: 8.2 a. Unprompted BRAM (vs. rest), 8.2 b. Prompted BRAM (vs. rest), 8.2.c. BRSM (vs. rest), 8.2.d. No memory (vs. rest).

BRSMs; these results resemble Burianova and Grady's (2007) investigation of common and unique neural activations in autobiographical and semantic retrieval where medial frontal gyrus is essentially related to BRSM. Although common regions of activation across BRAM and BRSM were examined, as Manns, Hopkins and Squire (2003) posited that hippocampus and medial temporal lobe activation relates to both AM and SM, these direct comparisons revealed that all uBRAM, pBRAM and BRSM share inferior frontal gyrus, middle frontal gyrus, and the thalamus. Although uBRAM and pBRAM show similar activations, BRSM is different by activating medial frontal gyrus. Taken together these results suggest that brand memories are represented separately in AM and SM.

These findings have a significant importance in consumer memory research because the study investigated the consumption memories related to separate long-term memory systems dichotomy (i.e. episodic nature of AM and SM) conceptualized and applied in other disciplines such as psychology and neuroscience (Baddeley, Eysenck and Anderson 2009; Steinvorth, Corkin and Halgren 2006; Gilboa 2004;Tulving 1983) enhancing our understanding that brand experiences store differently in the consumer mind for memory-based decision-making. This

separation of AM acknowledges the importance of AM in human behaviour as discussed in sociological literature in developing social relationship and maintenance (Bluck and Gluck 2004; Pratt et al. 1999; Nelson 1993) applicable and relevant to consumption experiences. This study identified brand-related memories in AM and SM rather than investigating memory in general or semantic nature that are common with memory studies in consumer behaviour research, which may influence differently in consumption behaviour.

Physiological activation of self-construal brain functions in BRAM and BRSM

Self-relevance activation neural regions have been identified by seminal neuroimaging studies (Gillihan and Farah 2005; Heatherton et al. 2006; D'Argembeau et al. 2007). As detailed in Table 8.3, when BRAM are recalled, self-relevant areas such as ventrolateral prefrontal (lateral orbiotfrontal) cortex and dorsolateral prefrontal cortex are activated in comparison to BRSM as an integral element of AM activation (i.e. uBRAM and pBRAM). As images a and b in Figure 8.2 demonstrate, when AM regions are activated, the self-construal areas are activated in BRAM conditions but not in BRSM condition.

These physiological findings evince the difference between AM and SM memories in relation to self-relevance in brand consumption experiences, as self-relevant brand-related memories are stored in AM whereas brand-related memories that are not self-relevant are stored in SM. These findings further validate the existence of two types of brand-related memories; BRAM and BRSM in consumer mind that has been under-investigated through extant studies in consumer memories. Importantly, self-relevance is an important research theme in consumer behaviour. For instance, Belk (1988) posited that the degree of consumer self-relevance influences one's motivation and consumption towards a product or service. Slama and Tashchian (1985) conceptualised the purchasing involvement as a general measure of the self-relevance of purchasing activities. Chung and Darke (2006) found greater positive word of mouth for products that are self-related than utilitarian products. Kardes (1988) discovered powerful information processing because of consumers' feelings of self-relevance and Celsi and Olson (1988) argued products and services that are self-relevant are instrumental in achieving important goals and values. Thus, this self-relevance of memories such as AM compared to SM has more relevance to brand-related information processing, decision-making and behaviour.

Physiological activation of affect-associated brain functions in BRAM and BRSM

Extant neuroimaging studies have discovered the activation areas of human brain in light of emotions and feelings; regions of the limbic cortex and ventromedial prefrontal area (Fink et al. 1996; Markowitsch 1998; Markowitsch et al. 2003), medial frontal gyrus, posterior cingulate gyrus and angular gyrus (Greene et al. 2001; Maddock 1999). As BRAM are affect-laden, it was expected to activate these areas in the subject's brain upon recalling BRAM in comparison to BRSM. As per the Table 8.3 above, ventromedial prefrontal area activation on both unprompted BRAM and prompted BRAM recall was evidenced, but not in BRSM, supporting the proposition that emotion activation is an integral aspect of AM.

Based on these findings, it is fair to judge that feelings and moods associated at the time of personal experience are also experienced at the time of BRAM retrieval whereas such emotional activation is not associated with BRSM. This is a key difference associated in BRAM versus BRSM and has important implications in consumer decision-making paradigms. As in Shiv and Fedorikhin (1999), consumer research has been predominantly cognitive in nature, and affect has received little attention. However, the concept of affect has been researched in advertising

(Batra and Stayman 1990; MacKenzie, Lutz and Belch 1986) and consumer satisfaction (Dube, Belanger, and Trudeau 1996; Oliver 1993) yet not much in consumer choice and decision-making (Shiv and Fedorikhin 1999). This study reflects the importance of affect in consumer decision-making, comparing affect-associated BRAM and BRSM from the memory perspective.

Implications and limitations

Consumer product evaluations are often influenced by information contained in their memories (Costley & Brucks 1992). Thus, these results have direct implications for our understanding of memory in consumer behaviour because, depending on how brand memories are stored and retrieved in consumers' minds, it affects subsequent decision behaviour (Plassmann et al. 2007). Psychological and neurological literature have clearly demonstrated the importance of multiple systems of memory and its influence on human behaviour due to various levels in the intensity of information storage, processing and retrieval associated to different memory systems. As a result, the extent of information available for decision-making varies with the information retrieved from each memory system. In addition to the consumer memory studies focused on semantic, implicit and explicit memories, this study reinforces the importance of multiple memory systems in consumer research by investigating AM in relation to brand consumption experiences despite the few studies reflected on the importance of AM in consumer behaviour (Braun-LaTour et al. 2004; Sujan, Bettman and Baumgartner 1993). Manifestation of BRAM also contribute towards rational and emotional decision-making models. Cognitive-rational decision-making has long been established and dominant in decision-making models while emotional-based decisions are gaining importance in consumption, brand relationships and decision-making (Marketing Science Institute 2010; Reed 2004). From the memory perspective, autobiographical referencing plays an important role in the emotional decision-making process compared to BRSM that may result in hedonic brand choices over rational evaluations.

The study also provides a new methodological perspective to study consumer memories. Neuromarketing or consumer neuroscience has been a topic of interest during the past two decades both among professionals and academics in marketing, because neuroimaging techniques have paved the way towards obtaining more rigorous and objective results compared to self-report measures with social desirability bias. This study demonstrates the use of neuroimaging studies as a complementary method to studying consumer memories with other traditional methodologies. In particular, fMRI studies can be useful and may have implications towards the methodological perspectives in consumer research.

However, the study is not without its limitations. Although physiologically AM and SM are separated based on different functions of the brain, when these different memory systems are activated, they interact with each other to perform a certain task and thus a perfect disassociation cannot be seen. In addition, it is difficult to truly separate where the AM and other forms of explicit memories begin and end, as they are separate systems but are cohesively connected. Despite this connectedness, AM has differing functions to other forms of memory and is located in different parts of the brain. Also the use of purposive sampling which is a non-random sampling method often limits the generalizability of the results.

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9

Looking at vision

Eye/face/head tracking of consumers for improved marketing decisions

Michel Wedel and Rik Pieters

Abstract

Against the backdrop of the rapid growth of the use eye tracking and facial recognition methodology, this chapter discusses the measurement of eye movements, facial expression of emotions, pupil dilation, eye blinks and head movements. After discussing some of the main research findings in the marketing literature to date, we reflect on future research and marketing applications of these technologies.

Key words

Eye movements, eye tracking, emotions, pupil dilation, gaze-based rendering.

Introduction

Tracking the eyes, head, and face of consumers can provide insights that cannot be obtained otherwise and that can improve managerial decisions about marketing strategies and tactics. While some of the early eye-tracking research in marketing dates back to the 1920s (Nixon 1924), in the last two decades there has been a rapid growth in commercial research applications of eye-tracking technology in the U.S., Europe, Asia and Australia. Firms that include Kraft Foods, Kimberly Clark, Microsoft, Google, Yahoo, IBM, Heinz, Pepsico, Pfizer, P&G, and Unilever are leading users of eye-movement research, in product and communication development, and in the design of advertising, websites, packaging and shelf layout. With the increasing demand from marketing practitioners, global providers of eye-tracking research conduct many hundreds of studies each year. Specialized commercial research companies include, for example, Perception Research Services, EyeTracking Inc, the EyeTrack Shop, and The EyeTracker. Many global market research players offer these services as well, and major manufacturers and service providers use the technology in their own research departments. Verify International in Europe has been one of the early research pioneers, starting in the 1980s. Much of the recent growth of eye tracking is driven by technological innovations and sharp declines in the costs of eye-tracking devices. Earlier, the commercial use of eye tracking was

limited to a few specialized companies, because running eye-tracking studies required high levels of specialization and expertise. In addition, erroneous beliefs in marketing practice about the limited influence of attention on consumer behavior, partly inspired by the AIDA model, have hindered progress. It has become progressively clear in recent years that attention has key selective and coordinating functions in all consumer behaviors of interest.

Nothwithstanding these barriers, the recent growth of eye-tracking research is undeniable and evidenced by specialized conferences on eye tracking, interest groups on eye tracking on linkedin.com, and by the over 4,700,000 hits that Google returned late 2012 using the search terms "eyetracking and marketing".

Eye movements

Yarbus (1967) and Noton and Stark (1971) were among the first to demonstrate that eye movements can provide a window on visual perception and higher-order thought processes of consumers. Since then, important insights have been gained about the nature of the fundamentally "hidden" visual perception and decision making processes using "observable" measures derived from eye-tracking methodology. Research has shown that eye tracking can afford insights that cannot be obtained by simple verbal self-reports about concurrent ("where do you look and what do you see?") or past visual behaviors ("where did you look and what did you see?") (Aribarg, Pieters, and Wedel 2010).

That is, we generally have the experience that we see the complete visual field at a high resolution in full detail. This illusion of "complete vision" is due to the fact that if we look at certain aspects of a scene or image, the focus of our attention is clear. Every time we change our eyes, we see the point of regard in full detail again. This gives the impression that all of the detail of the scene we look at can be perceived immediately. In addition, we are inclined to believe that we can readily and easily move our attention to peripheral parts of the visual field, without moving the eyes, that is, by looking "from the corner of our eyes". Both of these ideas are incorrect. Introspection falls short of informing us precisely how and why we move our eyes, and what we see and what not. Eye tracking is needed to establish where people look and what they could see there.

Dodge (1900) was one of the first to discredit the illusion of "complete vision", by revealing that what we believe to be smooth movements of our eyes across a scene in fact consists of sequences of fixations and saccades. Saccades are ballistic jumps of the eyes that project specific locations of the visual field onto the fovea. A saccade is one of the fastest movements in the human body, with speeds of up to 1000 degrees/second. People make around 170,000 saccades a day on average. They last around 20–100 milliseconds and are often prompted reflexively by something that stands out in peripheral vision. Yet, they can also be consciously controlled. Vision is mostly suppressed during a saccade. During a fixation, which typically lasts around 200–500 milliseconds (Rayner 1998), a contiguous region in the visual field that contains a location or object of interest is projected onto the fovea, a small and most sensitive region in the retina on the back of the eye, which enables it to be processed in detail. Yet, even during a fixation, the eye is never completely still and moves slightly. These movements include drift, tremor and microsaccades. Microsaccades are tiny movements, about 0.2 degrees of visual angle. They serve to continuously stimulate the neurons in the retina, and without them an object looked at would quickly fade. Further, vergence eye movements are movements where both eyes turn inward, in order to keep an object that moves towards or from the observer in focus (or vice versa). Finally, smooth pursuits are eye movements to follow moving objects, with speeds of up to 100 degrees per second. Whereas we can make saccades voluntarily, smooth pursuits cannot be made voluntarily without the presence of a moving object.

Eye tracking

In most commercial eye-tracking devices, infrared (IR) light is emitted from a light source and reflected off the eye, thereby creating a series of four, so called, Purkinje reflections, respectively on the front and back of the cornea and lens. Although several of these IR reflections can be measured simultaneously to very precisely pinpoint the location in the scene that is projected on the fovea, this requires head stabilization of the participants by means of a mouth-bit and a forehead or chinrest. Therefore, typical commercial eye-tracking devices measure only the first Purkinje reflection off the front of the cornea of one or two eyes, which provides sufficient accuracy. The difference between the center of the pupil and the IR corneal reflection changes with eye-rotation, but remains relatively constant with normal head movements. This is useful because if head movements are recorded as well, eye-tracking devices allow for fairly wide head movements during recording, and thus more unobtrusive measurement. The point of regard (POR) is determined from the angle and distance of the corneal reflection from the pupil center, after a calibration task. Infrared eye tracking typically has a temporal resolution of 50 Herz (Europe: 20 milliseconds) or 60 Herz (US) (or multiples of this), and spatial resolution of 0.5°, which is sufficiently accurate for commercial and academic applications in marketing. But the temporal resolution needed for fundamental research can be much higher, and some eye-trackers may provide up to 2000 Hz resolution (in which case the head of the consumer needs to be fixated). Eye-tracking devices record the x- and y-coordinates of the POR at a specific frequency, and this continuous trace of the POR has to be processed further before analysis by identifying fixations, saccades, smooth pursuits, and sometimes micro-saccades as well.

From the raw gaze patterns, eye fixations on the visual stimulus and the saccades between them are identified as key eye movement measures. Sequences of eye fixations, called scan-paths (Noton and Stark 1971), are the basic components used to understand in visual behaviour. Various algorithms have been proposed to identify eye fixations from the recordings of the point of regard (POR) that the eye-tracking equipment provides. Most algorithms commonly used in eye-movement research have identified fixations based on thresholds of velocity, distance, duration, angle, and/or acceleration of the POR. In practice, most often dispersion-based methods have been implemented in various commercial eye-tracking software, such as Tobii Clearview and Studio.[1] Recently however, velocity-based algorithms have gained increasing interest, because they are more transparent, and more accurate in identifying the precise beginning and end of saccades. Van der Lans, Wedel, and Pieters (2012) developed the Binocular-Individual Threshold (BIT) algorithm for identifying fixations, which is an open source, fully automatic parameter-free fixation-identification algorithm that identifies task- and individual-specific velocity thresholds by optimally exploiting the statistical properties of the eye-movement data across both eyes. Anomalies caused by blinks and tear fluid are filtered out of the raw gaze pattern. Blinks, head movements and the diameter of the pupil are often obtained as a corollary of infrared eye tracking.

Various companies in the U.S. and Europe, such as ASL, SMI (iView), and SRI Research (EyeLink2),[2] offer table-mounted systems, portable and light-weight head-mounted eye-tracking devices. The latter are particularly useful when eye-recording during unrestricted movement of people, such as during (simulated) shopping tasks. Among others, Tobii Systems and SMI offer an eye-tracking system that integrates eye-tracking cameras in an LCD monitor that is used to present the stimuli, as well as portable snap-on eye-trackers which can be connected to desktop and laptop computers (Figure 9.1). Further, miniature head-mounted eye-trackers embedded in glasses are rapidly gaining ground in applied research, and are offered by companies such as Tobii and SMI (Figure 9.2). The comparatively low costs of these new

Figure 9.1 Tobii's X1 compact snap-on eye-tracker in an in-home application.[3] Source: http://www.tobii.com/en/eye-tracking-research/global/products/

Figure 9.2 SMI's binocular mobile eye-tracking glasses in a shopper research application.[4] Source: http://www.eyetracking-glasses.com/gallery/

generations of eye-tracking systems, short calibration times, unobtrusive measurement, the possibility of tracking consumers with eyeglasses and contact lenses, and improved processing software have all contributed to the exponential growth of eye-movement applications in marketing practice, and their use for gaze measurement in natural exposure conditions, and its use in theory development and testing in academic research.

Pupil

The pupil is the opening at the center of the iris of the eye. It is the eye's aperture through which light passes, and changes in its diameter ensure optimal vision under varying luminance conditions, distance to the stimulus, and required visual angle. The pupil constricts to about 1.5 millimeters in bright light and dilates to about 8 or 9 mm in dim light. The pupil's diameter (pupil dilation) constantly fluctuates during waking hours (Beatty and Lucero-Wagoner 2000), to optimize incoming amounts of light. Analysis of pupil dilation for marketing purposes needs to take this into account. For example, the difference of the average diameter before and after a specific task or event of interest controls for background fluctuations and individual differences. Importantly, pupil diameter has been related to various cognitive and emotional processes, including arousal and processing intensity. Intensity of attention has also been linked to changes in pupillary diameter. Because the pupillary diameter has been found to enlarge with rising processing intensity, it is used as an indicator variable for processing intensity, although there is no direct causal relationship and the underlying cortical mechanism is still unknown. Thus, pupil diameter is a marker.

Facial expressions

Ever since Darwin reported on the strong link between experienced emotions and facial expressions, there have been efforts to develop methods to accurately and efficiently measure them. In particular, Ekman and Friesen (1978) developed the Facial Actions Coding System (FACS) to identify basic emotions from facial expressions. FACS has proven useful in marketing contexts, but has relied on laborious manual coding of video footage. Moreover, manual coding is prone to error and difficult to do at the high temporal resolutions at which emotions are expressed on human faces in real life. This has hampered its potential for use on a wide scale in marketing, until recently.

Currently, automated statistical detection of basic emotions from facial expressions is possible using specialized software. Detection algorithms trained on large datasets achieve at least the same accuraty as expert coders. Moreover, automated emotion detection, which can be done at a rate 4Hz (once every 250 milliseconds), provides the high temporal resolution needed to integrate emotion recording with eye tracking and assess its effects on downstream behaviors such as ad avoidance (Teixeira, Wedel, and Pieters 2012). Facial expression footage from each participant can be collected unobtrusively by means of cameras that record the participant's face, and in fact is part of eye and head tracking. The video images serve as input to emotion detection software, which works by fitting a virtual mask to the each frame containing an image of the face. This facemask adjusts to the form of the face, using amongst others markers on the eyes, eyebrows, nose, face, and mouth, and captures deviations in line segments connecting these markers. These deviations are processed online at the rate at which the video frames are recorded (often 4Hz), using a classification algorithm based on FACS and calibrated on the images of a benchmark database. If a participant smiles, for example, some of the deviations in line segments will increase, such as the one linking both corners of the lips,

while others will decrease, such as the ones linking corners of the lips to the cheekbones and the eyes. The output of the classifier is the probability that the viewer exhibits one of the basic six emotions, joy, surprise, disgust, fear, anger, and sadness, or a neutral state, at each video-frame. The developers of software for automatic emotion recognition from facial expressions include eMotion (Visual-Recognition and the University of Amsterdam),[5] FaceReader (by Noldus)[6] and OKAO (by Omron Corp).[7]

Blinking is the rapid closing and opening of the eyelid. It helps lubricate the eye by spreading tears across the cornea, removes dirt and dust from its surface, and reflexively protects the eye from damage by incoming objects and particles. The average blinking rate is about 6–10 times per minute, but it varies across individuals. Blink rates may play a role in non-verbal communication and can be affected by attention, excitement, anxiousness, or stress. Blinking can also be affected by the nature of the external stimulus looked at. For example, when the eyes are focused on an object or scene, or when reading for an extended period of time, the rate of blinking may decrease to about 3–4 times per minute. Also, there is a possible relationship between blink rate and the level of the neurotransmitter dopamine in the brain, which plays a role in attention focus and reward-driven learning. Blink-recording, although it can easily be obtained as a by-product of eye tracking, has not been used in research in marketing as yet, and only scarcely in basic psychology research.

Modern eye-trackers allow people to freely move their head while cameras record the positions of the eye and head. This may provide an unexpected window on the use of head movements as indicators of attention. In particular, people naturally make movements towards and away from ads and shelves to attain an optimal viewing distance. These head movements are often subtle. Posture, including that of the head, is controlled in part to facilitate the uptake of perceptual information and has been shown to be influenced by visual tasks. Movements of the eye and head in visual tasks are highly coordinated, being part of one integrated system under control of the same neural mechanisms (Gilchrist et al., 1998). Head movements have been

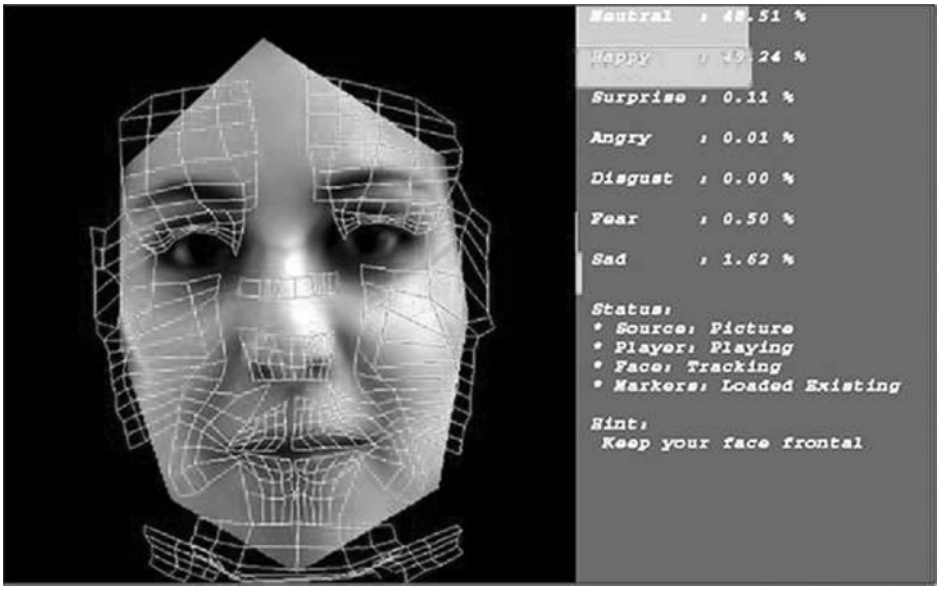

Figure 9.3 Emotion-recognition software creates a 3-D face map with 12 key triggers including the eyes, the brows, and the lips.[8] Source: http://www.wired.com/science/discoveries/news/2007/07/expression_research

shown to play a role in sports, driving, and face-to-face communication, but even in reading and the exploration of images. Like blink-recording, although head movements can easily be obtained as a by-product of eye-tracking they have not yet been used in marketing research, which is expected to change soon. Lateral (forward–backward) head movements might tap attention concentration and attempts to acquire detail (forward) or overview (backward) that may complement eye movement information about the point-of-regard.

Current findings

Eye-tracking research has yielded several robust findings about attention to advertising and other marketing stimuli (Pieters and Wedel 2012; Wedel and Pieters 2008). Some of these are the following.

Consumers spend much less time on advertising than is commonly believed: on average about 1–2 seconds to print ads in magazines and feature ads in newspapers. Gaze duration on print ads in magazines increases by 0.8% if the ad gets 1% larger. Gaze on feature ads in newspapers increases 0.2% with a 1% increase in their size. Attention to the pictorial and brand increase only about 0.3% if their size increases by 1%, while attention to the text in advertisements strongly increases with the amount of text: a 1% increase in the size of the text element in an ad leads to a 0.9% increase in gaze. These findings are counter to advertising practice that maximizes the size of pictorials at the expense of the text. This practice may be driven by the use of Starch-type recall methods that some market research companies use to assess visual attention to ads, which yield results that are biased towards pictorial importance.

The visual clutter in advertisements (which can be measured by the jpeg file-size of the ad image) reduces attention to the brand: a 1% increase in clutter reduces attention to the brand by 0.5%. Small differences in gaze on the brand element in print advertisements significantly improve brand memory (a 5% increase in memory for a single eye-fixation on the brand in case of magazine ads). Attention to the ad can improve sales: adjusted for their size, a 1% increase in attention to a feature ad inserted in a newspaper leads to a 0.3% increase in sales.

Consumers spend about 10–12 seconds searching a particular category on shelves in retail stores, and spend less than 1 second looking at each brand. Bottom-up effects (residing in the package and the shelf, including colors, edges, and shapes), which can be influenced by in-store marketing and packaging design, explain about 67% of the salience of packaging. Top-down effects (residing in consumers' memory and goals), which can be influenced by advertising and other marketing communications, explain the other 33% in salience and the resulting search effectiveness. Looking at a brand on a shelf can increase the probability of considering that brand for purchase up to 120%.

Future research directions

The last decades have seen increasing integration of methods and theories from vision, attention, Bayesian statistics, and eye-tracking research in order to inform and further improve marketing decision-making. These areas initially had progressed rather disparately. Vision science offers the tools to extract basic perceptual features from images, segment images, and recognize objects. Attention research offers theories that enable one to look into the mind of the consumer by observing their eye movements. Eye tracking offers methods of recording eye, pupil-, face- and head movements. Bayesian statistics offers the tools to formalize theories in realistic statistical models that enable inference on the unobserved attention processes and to make predictions on downstream effects. Combined, these fields of research provide an unprecedented insight into

consumers' moment-to-moment processing, evaluation, and appreciation of visual marketing stimuli, with predictive validity for downstream effects.

Whereas progress on this integrative research has been made in academia, much of eye-tracking research in marketing practice unfortunately does not do more than present heat-maps of ads, shelves, and web-pages, representing where respondents look most through visually appealing plots (Figure 9.4). Although these heat-maps and gaze-plots may provide qualitatively interesting insights, and therefore initially generated much interest from clients, once their novelty fades interest wanes, as reports become saturated with heat-maps derived from often small samples of respondents with mostly little predictive power. This threatens the very prospects of eye-tracking research, as users are becoming increasingly disappointed with the actionability of the insights it provides. The use of analytics and quantitative metrics will prove to be key to the survival and continued success of eye-tracking research. However, eye-tracking research for large samples of respondents and ads or websites may generate very large datasets, the proper analysis of which requires much substantive expertise and computing power. One of the forerunners in practice in dealing with datasets of this size and models of the required complexity, is the analytics company In4mation insights,[9] which has capabilities to integrate eye tracking in models of consumer choice and sales response, and uses Bayesian statistics to provide insights and downstream predictions.

In future research on eye tracking, the integration of vision, attention, and eye-tracking research and combining experimental procedures and Bayesian statistical models will enable us to obtain views of "the cognitive iceberg, from the visible tip of the eye-movements" (Russo 1978). Large samples of participants, and even more importantly large samples of marketing stimuli will facilitate generalizations of findings, establish their downstream marketing impact and enable the analytical optimization of visual marketing effort. It is therefore a research priority to develop integrative models of visual attention (using Bayesian statistics) that represent the interplay of bottom-up (using methods and theories of vision research) and top-down effects (using methods and theories from attention research) on salience and informativeness of visual marketing stimuli assessed through eye-tracking. Eye-movement research into patterns of attention on a wide range of marketing stimuli are called for, with web-stimuli, including comparison sites and search pages, being a priority. This is so, because of the high external validity of eye-tracking experiments, a relative lack of current research, their commercial importance, and interesting multi-modal visual environments which include sponsored search, clips, banner ads, product reviews, product comparison lay-outs, tag-clouds, and editorial content.

A particularly important area of research uses these eye-tracking methods to improve our understanding of consumer choice decisions in various contexts (Shi, Wedel, and Pieters 2013). A second area of great interest is the study of what happens at the very first eye-fixation, because that strongly determines the subsequent scan-path of the eyes, while, moreover, many marketing stimuli do not receive more than such a single fixation (Pieters and Wedel 2012).

In order to gain an ever better understanding of visual attention in real life, it may prove valuable to integrate statistical models of attention processes and their estimates of key parameters, with cognitive simulation models such as EPIC (Meyer and Kieras 1997). With estimated attention parameters as inputs, such simulation models may allow for predictions from even richer models, representing theories of attention and memory at a level of detail that would be difficult to bring to empirical eye-movement data using statistical modeling. In various cases, these models offer the opportunity to simulate and predict attention and eye-movement patterns for specific marketing stimuli, without even running eye-tracking studies with participants. Next to academic applications, such simulation models therefore present big opportunities for the evaluation of ads, shelves, billboards, and websites in marketing practice. See, for an example

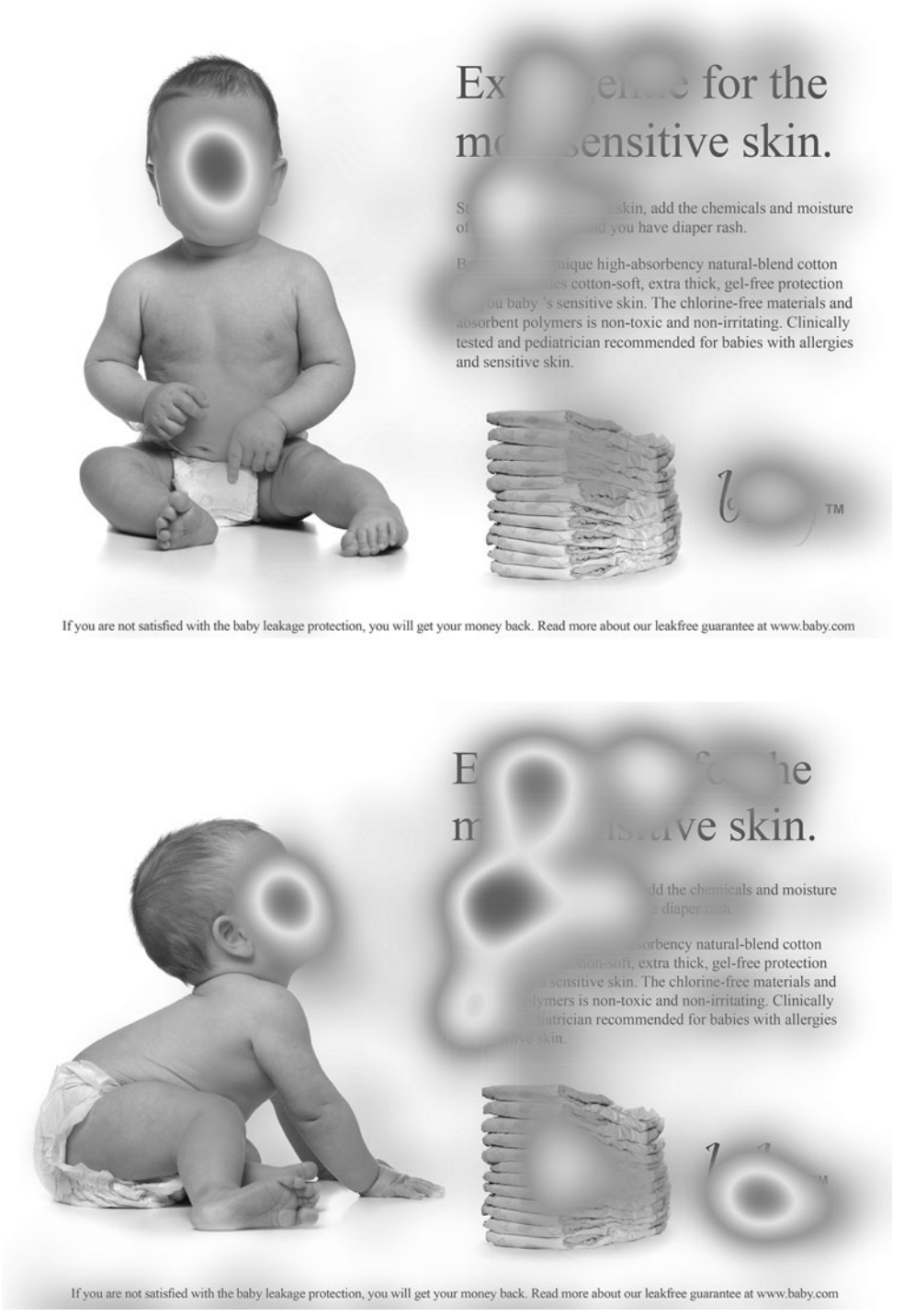

Figure 9.4 Heat-map of eye-tracking study with striking findings on the effect of facial orientation on gaze.[10] Source: http://uxdesign.smashingmagazine.com/2009/09/24/10-useful-usability-findings-and-guidelines/

of implementation of the simulation of bottom-up salience, Ilab.[11] We also see much potential for the further development and application of formal analytical methods to optimize the design of visual marketing stimuli, including print and feature ads, TV commercials, movie-trailers, web-pages, billboards, shelves, and packages.

Future applications

Eye tracking is not yet ready for mass markets, because for direct consumer applications the equipment is still too costly, and overly specialized knowledge is required to operate and analyze the data. In 3 to 5 years, however, we expect eye tracking to be an integrated part of our everyday lives, and be incorporated in laptop and desktop computers, billboards, kiosks, smart-TVs, and smart-phones. This will help to make us more efficient, and help to make our daily lives simpler, safer, and more enjoyable.

New eye-tracking software has already been developed that, instead of infrared cameras, only needs a webcam. Front-facing cameras have become standard on computers and mobile devices. Open source software is available for these webcam applications, for example through OpenEyes.[12] For marketing research, this has begun to open up new opportunities, because remote eye-tracking studies on large panels of respondents are now a possibility. Participants can be tracked sitting in front of their computer at home or anywhere else, as long as they have a webcam and an internet connection. The eye tracking through webcams currently still lags behind in accuracy and quality, because data collection at home is still often hampered by calibration issues, but that is made up for by large sample sizes and more natural conditions. Companies that provide such webcam eye-tracking services include GazeHawk[13] and EyeTrackShop.[14] And, nViso[15] uses webcams to remotely record emotions on respondent panels through facial recognition.

The rapid advancement of this recording technology opens up a vast array of other possibilities. When software records where consumers look at on their computer, their access to information on computers and the web can become hands-free. Interaction with a wide range of electronic devices will become more flexible through gaze-control. For example, companies such as Tobii[16] have integrated eye tracking and gaze-control in laptops. The user can employ her eye-gaze to activate windows and apps, scrolling through pages and options by swiping through them with her eyes, and making a selection or activating applications by fixating on one of them. This gaze-control technology provides users with an easier and more efficient way to control their laptops and improves the overall user experience. Moreover, when software records what users look at it can support critical processes, in particular help in search. In combination with automated image analysis, eye-tracking technology may allow for automatic alerts if important information is overlooked, and may use visual cues such as color, contrast, selective blur, and clarity to interactively direct search. This may improve safety and efficiency in tasks such as driving and flying, search in medical X-ray, and baggage scanning images, and in video surveillance.

Similar applications have been developed for smart-TV and smart-phones as well. The Eye Tribe[17] creates software that allows users to interact with their mobile device just by looking at it. Samsung has a new phone with, next to voice recognition, eye-tracking capabilities, and Apple has patented technology to render 3D images based on eye-tracking methods. In the very near future, consumers will be able to see 3D on their smart-phones, and interact with them by directing their gaze.

The emerging technology will also render computer games much more immersive. Gamers can, just as in real life, interact with characters and avatars simply by looking at them: Formula Face[18] enables users to use blinks, smiles, and head movements to control their game. Waterloo

Labs allows players the use of eye movements to control EyeMario.[19] But, even more, as a player moves her head, expresses emotions, or blinks, the animated heads and faces can move in sync, and mirror these movements and emotions: they smile when the player smiles, stare back when the player stares, and blink when the player blinks. Thus, eye, head and facial movements are recorded and analyzed to render avatars' movements and expressions more realistic, and more in tune with the users' moment-to-moment feelings, producing games that are more immersive and appealing. Optitrack's[20] face capture system goes a long way in accomplishing that.

These systems can support learning through applications in educational games. Interactive online education can benefit from recording and feedback of head, face and eye movements of students, not only to improve the online interface, but also to improve student focus and comprehension in real time. Students may control avatars to help them absorb the material more effectively at their own pace as the avatar tunes in to their moment-to-moment behavior. In reading, word explanations may appear when eye movements indicate comprehension is slow. Selective blurring and focus of text may improve reading focus and speed. Much of this is implemented in Text 2.0.[21] Further, using an eye-tracker to identify the words and sentences that receive longer gaze in document information systems, document summaries can be created, and optimized according to the reader's personal interests. To develop recommendation systems that recommend new articles, texts or reviews, based on what a user has looked at previously on her laptop, notepad or smart-phone, is a next step. Similarly, the implementation of eye tracking and face-recognition on these electronic devices makes it possible for keyword and image search results to be displayed dynamically, using the users' moment-to-moment gaze on keywords or images and their associated emotions as input. Other applications of gaze-contingent rendering allow the interactive display of objects, products, images, text, and ads on web-pages, rendering relevant aspects in higher detail based on users' gaze. Dynamic gaze-cueing may direct students' gaze to the most relevant aspects of the material.

Not only does eye gaze have the potential to revolutionize interaction with Smart devices, it may also improve the targeting of marketing effort. Gaze-based rendering and 3D vision may play important future roles in enhancing online shopping experiences. Further, by integrating an advertising recommendation engine with gaze and face tracking on smart-TV, advertisers can display ad content dynamically, based on viewers' prior gaze. For example, interactive gaze-cueing may be used to direct viewers to these product placements, if initially missed. Further, if a viewer focused on the brand in a product-placement during a TV show, a gaze-contingent recommendation engine can show an ad for that product during the subsequent commercial break. And, the composition of commercials during the break can be adapted dynamically based on viewers' gaze, emotions, and zapping behaviour. The Mirametrix[22] eye-tracking analytics suite already enables the implementation of some of this kind of highly targeted ad placement on smart-TVs. Attentive and interactive billboards, digital ads, and digital point of sale devices may in the future adapt dynamically to the density of traffic or viewers, and their facial expression, head- and body-movements, and gaze. Dynamic billboards that present more content-rich ads if traffic slows down, have already been implemented. And, the Italian company Almax[23] has developed the "EyeSee" mannequin that can tell if a shopper is male or female, estimate her age, and record how much time shoppers spent looking at it and its outfit (Figure 9.5). The EyeSee can soon also capture keywords in conversation between shoppers, capture gaze patterns and classify facial expressions and emotions.

As interactive digital devices watch how long people look at images, words, people and products, if their pupils dilate, how their heads and postures change, how fast they blink, and what emotions they display, this will explode information about their visual behavior their day-to-day lives. Therefore, if these technologies become available in mass markets, an outburst of

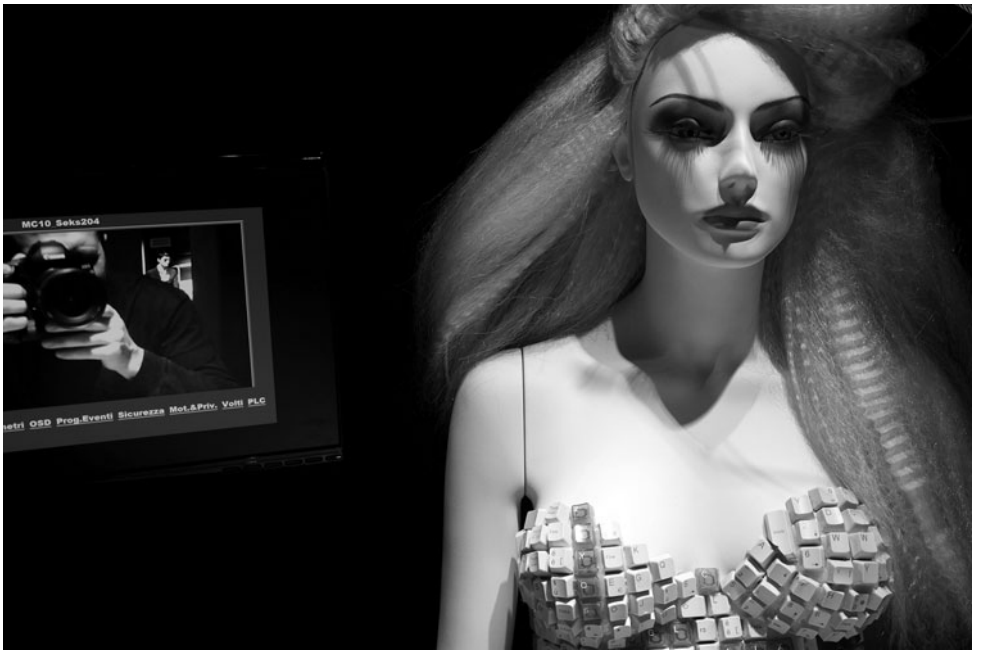

Figure 9.5 The EyeSee mannequin from Almax that watches shoppers

eye-movement and face recognition data will ensue, similar to the one in internet click-stream data that we have seen in the last two decades. That wealth of data will be of great value to market research companies, manufacturers, retailers and service providers, and enable them to even better tailor products, services and marketing effort to individual consumers' interests and experiences. Dealing with that data, however, will require powerful cloud-computing, Bayesian statistical algorithms, and careful consideration of consumer privacy. Yet, when accounting for these, unprecedented new insights into consumer decision making become available that hold the promise of improving managerial decision making and consumer welfare.

Notes

1 http://www.Tobii.com
2 http://www.a-s-l.com; www.smivision.com; www.sr-research.com
3 Source: http://www.tobii.com/en/eye-tracking-research/global/products/
4 Source: http://www.eyetracking-glasses.com/gallery/
5 http://www.visual-recognition.nl/eMotion.html
6 http://www.noldus.com/human-behavior-research/products/facereader
7 http://www.omron.com/r_d/coretech/vision/okao.html
8 http://www.wired.com/science/discoveries/news/2007/07/expression_research
9 http://In4ins.com.
10 http://uxdesign.smashingmagazine.com/2009/09/24/10-useful-usability-findings-and-guidelines/
11 http://ilab.usc.edu/bu/
12 http://thirtysixthspan.com/openEyes/
13 http://www.gazehawk.com/
14 http://eyetrackshop.com/
15 http://nviso.ch/
16 http://www.tobii.com/
17 http://theeyetribe.com/

18 http://www.redbull.com/cs/Satellite/en_INT/Game/Red-Bull-Formula-Face-021243076152177
19 http://waterloolabs.com/
20 http://www.naturalpoint.com/optitrack/
21 http://text20.net/
22 http://www.mirametrics.com/
23 http://www.almax-italy.com/

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Part III

Reconnecting with consumers and markets

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10

Evaluating customer relationships

Current and future challenges

Siddharth S. Singh and Dipak C. Jain

Abstract

Customer relationship management (CRM) has been a cornerstone of marketing for sustainable profitability for many years. CRM means leveraging databases of customers to increase profitability. These databases primarily contained information on customers and their past customer–firm interactions to a varying degree (e.g. just purchases and promotions, or purchases and returns). The variables tracked were commonly used to evaluate customers (i.e. customer lifetime value), and analyze customer behavior for customer management strategy (e.g. customer acquisition, retention, upselling, and cross selling). All this aimed at increasing the value of the customer base over time. While consensus is yet to develop regarding customer purchase behavior over lifetime with the firm, technological changes have brought in more complexities.

In this chapter, we first discuss the extant literature on customer purchase behavior over lifetime with the firm and present our new research; we then discuss the commonly accepted framework for measuring customer lifetime value, and present a new framework that is better suited in our current environment.

Understanding purchases and returns over customer lifecycle

Introduction

Knowledge of purchase and return behavior of customers is important to firms for managing profitability over the customer lifecycle (i.e. the duration of the customer–firm business relationship). Towards this end, it is valuable for firms to understand how customer purchase and return behavior change over the customer lifecycle, and how each purchase and return event impacts the remaining customer lifecycle. Researchers have investigated various related issues particularly focusing on the lifetime value of customers and its drivers. Previous research[1] has identified that some of the critical determinants of managing customer profitability over time are purchases, returns, purchase frequency (interpurchase time), and customer defections (customer lifecycle or lifetime). Also, in practice firms commonly use purchase commitments as instruments to manage customer value. An understanding of these determinants is important to manage customer relationships profitably.

A purchase transaction has two main components—quantity of purchase (units) and the amount spent ($). Both these are important to get a complete picture of a purchase transaction. In this chapter, we first focus on purchases and returns, and purchase commitments, over the entire customer lifecycle to investigate:

- How do the quantities of purchase and return change as customer lifecycle progresses?
- What is the relationship of purchases and returns with customer defection?
- What is the relationship between purchase commitments and customer behavior of purchase, return, and defection?

Our discussion of these research issues is based on our new research in which we jointly model the quantities of purchase and return, risk of customer defection, and purchase frequency to investigate how these evolve over customer lifecycle with the firm.

Besides understanding customer behavior over time, a firm needs to understand the key metric of customer lifetime value that forms the basis of many decisions in CRM. Next we focus on segmentation of customers based on their lifetime value, accounting for both observed and unobserved customer heterogeneity. This part is based on our research where we jointly model customer spending, interpurchase times, and customer lifetimes using a latent class framework (Kamakura and Russell 1989). In this part, we also discuss the relationship between returns and customer lifetime value (CLV) to highlight the importance of returns in estimating CLV, something that has been mostly ignored in practice. Finally we end with a discussion of the future direction for research and practice. We now discuss the relevant literature.

Literature review

The extant literature recognizes that customer behavior and estimation of customer value are dependent on the context of the customer–firm relationship. Therefore, we first discuss issues related to this context and place our research in the commonly accepted framework.

An important factor that emerges from a review of the related literature is the context of the customer–firm relationship that generates the data used in a research (Singh and Jain 2010; Seiders et al. 2005; Venkatesan and Kumar 2004; Reinartz and Kumar 2000 and 2003; Bolton 1998; Bhattacharya 1998). Contexts have been broadly categorized as noncontractual (where customer defections are not observed) and contractual (where customer defections are observed) (*see* Singh and Jain 2010; Fader, Hardie, and Lee 2006). In analyzing customer behavior, the extant literature has mostly focused on noncontractual contexts and specific types of contractual contexts.

Noncontractual contexts such as retail and catalog sales are interesting because the lack of information about customer defections makes measurement of customer lifetime value (CLV) and investigation of customer behavior over the entire unobserved customer lifecycle challenging. To do so, researchers have to make assumptions about customer lifecycle. For example, it is commonly assumed that customer lifecycles follow exponential distribution (e.g. Schmittlein and Petersen 1994); however, recent research has shown how to relax these assumptions (e.g. Singh, Borle, and Jain 2009).

Within contractual contexts, most studies have focused on cases where customer lifecycle duration has a known positive relationship with customer purchase behavior (and thus profits from the customer), and therefore customer retention becomes of key importance (e.g. newspaper and magazine subscriptions, continuous service provides such as cable TV, and cellular services).[2] A large segment of contractual contexts where there is an uncertain relationship

between customer lifecycle and purchase behavior has scarcely been studied despite its importance in practice. Examples of such contexts include membership-based purchase clubs (e.g. Sam's Club, Costco, and BMG Music Service), credit card services, and some telecom services. Firms in these contexts commonly use various types of contracts with customers to manage customer value. For example, purchase clubs either require a membership fee to become a member and purchase (e.g. Costco) or require some form of purchase commitment (e.g. BMG Music Service) to become a member and purchase.

In our research, we use data from a direct marketing membership-based company where completed customer lifecycles are known to the firm with certainty once a customer defects. Therefore, ours is a contractual context. However, during the membership period, the timing and quantity of purchases and returns are not known to the firm a priori. Thus, there is an uncertain relationship between customer purchase behavior and lifecycle, just like in a noncontractual context (Seiders et al. 2005; Reinartz and Kumar 2003 and 2000). Finally, minimum purchase commitments are required before purchases can happen. The specific contractual context we focus upon is common in practice; however, it has not been studied much. We now discuss the extant literature related to the research issues.

Research framework

We now discuss the details related to the following research questions.

How do the quantities of purchase and return change as customer lifecycle progresses?

Quantity of purchase: While spending (or contribution margin) by customers has been a focus of many studies in the extant marketing literature (e.g. Petersen and Kumar 2009; Borle, Singh, and Jain 2008; Kumar, Shah, and Venkatesan 2006), the quantity (units) of purchase has been less studied in marketing. The investigation of the purchase quantity decision in marketing has been mainly confined to the brand choice-panel data literature where purchase quantity decision is investigated with brand choice decision over a specific period of time (e.g. Chintagunta 1993). Within CRM related studies, Venkatesan and Kumar (2004) have considered the quantity of product bought by a customer as an exogenous explanatory variable in the model for other outcomes. Most studies outside mainstream marketing investigating the purchase and return quantities have focused on the operational aspects such as inventory management and reverse logistics (e.g. Stock and Mulki 2009; Bell and Chen 2009). Overall, the research on the quantity of purchase is fairly limited in marketing. Also, the relationship between purchase quantity and customer lifecycle has not been investigated.

Among the relevant studies, Reichheld and Teal (1996) empirically study examples primarily in contractual contexts where there is generally a positive relationship between lifecycle duration and profitability, and suggest that customers purchase more (both spending and types of purchases) over time as their lifecycle with a company advances. Dowling and Uncles (1997) caution against assuming a positive relationship between loyal customers and profitability. Reinartz and Kumar (2000) empirically test the relationship between customer lifetime and profitability in a noncontractual context and do not find support for a positive relationship between lifetime and profitability. They build a strong case for the fundamental differences between contractual and noncontractual contexts and describe contractual contexts as those where longer customer lifetime implies higher profits from the customer, since there is no repeated cost to encourage sales. In our context, the firm sends a periodic magazine to all its members thus there is some

cost associated with customer relationships. Also, customer purchase behavior is uncertain. Therefore, understanding of the relationship between customer lifecycle and purchase behavior has significant implications for customer management strategies of the firm.

Quantity of return: Return of purchased product or product return by a customer is an activity that is undesirable for both the customer and the firm. It is estimated that customers return $100 billion worth of products each year. The reasons for this trend include the rise of electronic retailing, the increase in catalog purchases, and a lower tolerance among buyers for imperfection (Stock, Speh, and Shear 2002). Hess and Mayhew (1997) suggest that in the context of direct marketing, the fact that customers do not physically evaluate a product before purchasing increases the risk of returns. Further, direct marketers should expect 4%–25% of their sales to be returned. Clearly, product returns are important to firms and they have a significant impact on customer profitability. This importance, however, is not reflected in the research output related to product returns in marketing[3] where the primary focus has been on analyzing return policies (Anderson, Hansen, and Simester 2009; Wood 2001).

Some other studies in marketing that focus on returns are as follows. Petersen and Kumar (2009) empirically analyze the amount spent and returned in a catalog sales company (a noncontractual context) and find that product returns by a customer positively impact the customer's future buying behavior up to a threshold. This study investigates the dollar amount of purchases and returns and does not consider purchase and return quantities that are investigated in the current study. Also, it does not consider customer behavior over the entire lifecycle and considers the inter-return time interval as exogenous. To our knowledge, the relationship between returns and customer lifecycle remains unexamined. Kang and Johnson (2009) investigate the relationship between apparel return behavior and fashion innovativeness, buying impulsiveness, and return policies and find that apparel return was positively related to buying impulsiveness and consideration of return policies. Finally, Hess and Mayhew (1997) investigate product returns in a direct marketing context and focus on the questions of when will a product be returned and will it be returned. They model the timing of product return using a hazard model and the discrete split between returns and non-returns using a logit, with the return/non-return probability independent of time.

What is the relationship of purchases and returns with customer defection?

The importance of the duration of customer lifecycle is evident from the popularity of customer retention/loyalty programs (Cigliano, Georgiadis, Pleasance, and Whally 2000) among firms. While some researchers have investigated the relationship between actual total customer lifetime and various factors in a contractual context (e.g. Borle et al. 2008; Thomas 2001; Bolton 1998; Bhattacharya 1998), others have investigated the relationship of various factors with *profitable lifetime* of customers (Reinartz and Kumar 2003) or *assumed lifetime* of customers in a noncontractual context.[4] To our knowledge, the relationship between purchases and returns with the *actual total customer lifecycle* (or customer defection), while treating these variables as endogenous, has not been empirically investigated in the literature.

Purchases that are not returned signify a satisfying purchase experience for a customer and thus could lead to lower likelihood of defection. Returns on the other hand present a more complex picture. Returns are problematic for firms in many ways beyond the immediate effect on lost sales. A firm has to manage the costly returns process (i.e. reverse logistics). Further, the experience of product return might impact future customer purchase behavior—an issue only partially addressed in the literature. While some argue that the experience of returns, if well handled by the firm, can satisfy a customer leading to increased loyalty and

subsequently longer lifetime (*see* Stock et al. 2002), others argue that returns are bad experiences to start with and thus likely to increase the likelihood of customer defection. Recent research suggests that the option to return has a positive value for customers (Anderson, Hansen, and Simester 2009) and that returns positively impact the customer's future buying behavior up to a threshold (Petersen and Kumar 2009). This issue needs more research because the relationship of returns by a customer on his/her risk of defection has not been investigated empirically so far in any context.

What is the relationship between purchase commitments and customer purchases, returns, and defection?

Many types of firms in a contractual context require commitments before purchases can happen. For example, these commitments can take the form of an upfront membership fee (e.g. Sam's Club) or they can take the form of minimum lifecycle and periodic payments (e.g. telecom services). In some cases, the commitment required takes the form of promise to purchase some minimum number of items in a given time (e.g. hobby-based clubs such as music and book clubs). This last form of commitment, to our knowledge has not been empirically investigated in marketing. It has two dimensions, one relates to the purchase of a minimum number of items and the other relates to the time period during which this minimum number of items is to be purchased.

Although such commitments are used by many companies, how customer behavior changes with change in the commitment status is not known. Once a customer has fulfilled the commitment obligations, what should the firm do? If the firm has knowledge of how customer behavior changes with commitment fulfillment status, it can prepare accordingly. It is noteworthy that in many cases these commitments are hard to enforce in practice due to the high cost of enforcement relative to low benefit from commitment fulfillment. Our interest lies in investigating how the commitment status affects behavior. The fact that firms have these commitments is reflective of the benefits they believe they get from them. It is likely that customers purchase more when they have not yet fulfilled their commitments, to complete the commitment obligations. The next section describes the model formulation.

Model formulation

We jointly model the risk of customer defection, risk of customer purchase, the number of items purchased during a purchase event, and the number of items returned from those purchased during a purchase event. Our model investigates the change in purchase and return behavior of customers over their entire lifecycle with the firm.

To understand the model, consider a typical customer who joins the firm's membership. This customer is observed from the time she becomes a member of the firm until the time she leaves it. In between, she makes multiple purchases and returns items from those purchases. The time of each purchase (and subsequent return if it happens), the number of items purchased, the number of items returned, and the time when the customer terminates the membership, are known in the data.

After joining the firm, a customer is considered *at risk* of leaving the membership until she actually leaves. In addition, at all times during her membership, she is *at risk* of purchasing from the firm.[5] We refer to these event risks as the *hazard of leaving (or lifetime or defection)* and the *hazard of purchase (or interpurchase time) respectively*. During a purchase event, the customer decides how many items she wants to purchase, and then decides how many of these items she wants to

return. In the data, the timings of returns are the same as those of purchases to which the returned items belong.

We now describe the model for each behavior and then propose the joint model formulation.

Model for customer defection

Customer defection has been primarily studied using hazard rate models (e.g., Poel and Lariviere 2004; Bolton, 1998). Researchers in marketing have most commonly used either the Cox (1972, 1975) proportional hazard model (e.g. Bolton 1998) or fully parametric proportional hazard models (e.g. Bhattacharya 1998) to model customer defection. Research suggests that proportional hazard models are superior to other common procedures in terms of stability, face validity of the estimates, and predictive accuracy (*see* Helsen and Schmittlein 1993). The use of fully parametric models has a disadvantage that the duration dependence is restricted to follow specific patterns over time. Thus, specification error becomes a major concern.[6] Ridder and Verbakel (1983) find that the misspecification of the time dependence function (i.e. baseline hazard) has important consequences and a flexible specification of this function solves the issues. Further, they find that misspecification of the unobserved heterogeneity distribution does not create serious issues (*see* also Lancaster 1997, pp. 304–5).

In order to achieve the ability to recover the baseline duration dependence, and flexibility to recover complex patterns of baseline duration dependence, we use a semiparametric proportional hazard model developed by Lillard (1993) to model the risk of a customer defection from the firm. In this model,the baseline hazard consists of piecewise linear splines. We provide a brief description of the hazard model using a notation similar to Lillard (1993), which can be referred to for additional details (*see* also Panis 1994).

In this model, the log-hazard is specified as a linear function of the duration dependence represented by piecewise linear splines, and explanatory variables that impact the hazard proportionally. We choose the location in time and the total number of nodes (joints of the splines) of the baseline log-hazard. The slopes of the splines are estimated along with the other model parameters. This model is highly flexible and can model practically any shape for the baseline hazard depending on the data and the number of nodes selected.

The following log-hazard equation specifies our customer defection model (i.e. the hazard of lifetime; superscript *l*):

$$\begin{aligned}\ln\left[h_i^l(t)\right] &= \alpha_0 + \boldsymbol{\alpha}_1' T_i^l(t) + \alpha_2\left(\text{Gender}_i\right) + \alpha_3\left(\text{Age}_i\right) + \alpha_4\left(\text{Salary}_i\right) \\ &+\alpha_5\left(\text{PromInitial}_i\right) + \alpha_6\left(\text{Promotion}_{it}\right) + \alpha_7\left(\text{CommitPurch}_{it}\right) \\ &+\alpha_8\left(\text{CommitTime}_{it}\right) + \alpha_9\left(\text{LagItems}_{it}\right) + \alpha_{10}\left(\text{LagReturn}_{it}\right) + u_i \end{aligned} \quad (1)$$

where the subscript *i* denotes an individual member (customer) of the firm, $h_i^l(t)$ denotes the risk of customer defection at time *t*, and $T_i^l(t)$ represents the duration splines for the time since customer *i* joined the firm. The explanatory variables *Gender*, *Age*, and *Salary* represent the gender (female = 1) of the customer, average age of the residents of the "block" where the customer resides, and the average weekly salary of the residents of the block where the customer resides (in $), respectively. The variable *PromInitial* represents the difference between the total market price and the total actual price paid for the items purchased by the customer in the introduction package and the variable *Promotion* represents the ordinary promotions that the firm sends to its customers from time to time. As part of the membership agreement, each customer is required to commit to purchase some minimum number of items in a given time

period. *CommitPurch* is an indicator variable taking a value of one for all the purchase events until the customer has fulfilled the minimum purchase commitment requirement. *CommitTime* is an indicator variable taking a value of one for all time periods less than the time provided to fulfill the purchase commitment as part of the membership agreement. *LagItems* represents the total number of items purchased by customer *i* during the previous (latest) purchase event, and *LagReturn* represents the total number of items returned by customer *i* from among the purchases made during the previous purchase event (i.e. *LagItems*).

We represent the vector of explanatory variables by $X_i^l(\mathbf{t})$. The α's represent the model parameters, where all of them are scalers except α_1 which is a vector (denoted in bold). The term $\boldsymbol{\alpha}_1' T_l^i(\mathbf{t})$ represents the duration dependence of the log-hazard of defection since the time individual *i* joins the firm until time *t* through piecewise linear splines, where α_1 is the vector of the slope coefficients of the duration splines. Therefore, if we allow the baseline hazard to have three nodes, then there will be four splines (linear segments) in the baseline duration dependence of the log-hazard. The first spline will represent the duration dependence from the time of a customer joining the firm until the time of the first node (we represent this slope by the parameter α_{11} which is the first component of the vector $\boldsymbol{\alpha}_1$), the second spline will represent the duration dependence from the time of the first node until the time of the second node (we represent this slope by α_{12} which is the second component of the vector $\boldsymbol{\alpha}_1$), and so on. Finally, u_i represents all the unobserved customer-specific factors that impact customer defection. We assume that u_i is distributed normally with mean zero and variance σ_u^2.

The conditional likelihood of a completed customer lifecycle, conditional on the observed explanatory variables and u_i, is given by

$$f_i^l\left(t_i^l; X_i^l(t), u_i\right) = S_i^l(t_i^l; X_i^l(t), u_i) h_i^l(t_i^l; X_i^l(t), u_i) \tag{2}$$

where $S_i^l(\mathbf{.})$ is the conditional survival function, and represents the conditional likelihood of a censored lifetime duration.

Model for interpurchase time

This model formulation and its notation are similar to the customer defection model. The log-hazard of purchase is modeled as:

$$\begin{aligned}
\ln\left[h_{ij}^p(t)\right] &= \beta_0 + \boldsymbol{\beta}_1' T_{ij}^p(t) + \beta_2\left(\text{Gender}_i\right) + \beta_3\left(\text{Age}_i\right) + \beta_4\left(\text{Salary}_i\right) \\
&+ \beta_5\left(\text{PromInitial}_i\right) + \beta_6\left(\text{Promotion}_{it}\right) + \beta_7\left(t_{ipp}\right) + \beta_8\left(\text{CommitPurch}_{it}\right) \\
&+ \beta_9\left(\text{CommitTime}_{it}\right) + \beta_{10}\left(\text{LagItems}_{ij}\right) + \beta_{11}\left(\text{LagItems}_{ij}\right)\left(t_{ipl}\right) \\
&+ \beta_{12}\left(\text{LagReturn}_{ij}\right) + \beta_{13}\left(\text{LagReturn}_{ij}\right)\left(t_{ipl}\right) + \nu_i
\end{aligned} \tag{3}$$

where $h_{ij}^p(\mathbf{t})$ denotes the risk of purchase (i.e. hazard of purchase) for customer *i* at time *t* after the (*j-1*)th purchase event until the *j*th purchase by the customer. The variables *Gender*, *Age*, *Salary*, *PromInitial*, *Promotion*, *CommitPurch*, *and CommitTime* have the same meaning as before. The variable $LagItems_{ij}$ represents the number of items purchased during the (*j-1*)th purchase event and the variable $LagReturn_{ij}$ is interpreted similarly. The variable t_{ipl} is the percentage of lifecycle elapsed until the latest purchase, i.e. the (*j-1*)th purchase event.[7]

The coefficients β's represent the scaler model parameters except β_1 which is a vector of the slope coefficients of the baseline duration splines. We denote the vector of explanatory variables by

X_{ij}^{p}. The term $\beta_1' T_{ij}^{p}(\tau)$ represents the baseline duration dependence of the log-hazard of purchase. The unobserved customer-specific heterogeneity is denoted by which is assumed to have a normal distribution with mean zero and variance σ_v^2. The last interpurchase time (the time between the last purchase and the time of the customer leaving the firm) for each customer is treated as a potentially nonrandomly censored observation of interpurchase time. This is because a customer must remain with the firm in order to purchase from it, and customers choose to defect.

Let the probability that the j th purchase will not occur by time t after the latest purchase event conditional on the sequence of covariates up to that time, and unobserved heterogeneity ν_i be denoted by $S_{ij}^{p}(t_{ij}^{p}; X_{ij}^{p}, \nu_i)$. This is also the conditional (on ν_i and X_{ij}^{p}) likelihood of the j th censored interpurchase time at the time customer i defects. The conditional likelihood of completed j th interpurchase time interval of duration t_{ij}^{p} is given by

$$f_{ij}^{p}\left(t_{ij}^{p}; X_{ij}^{p}, \nu_i\right) = S_{ij}^{p}(t_{ij}^{p}; X_{ij}^{p}, \nu_i) h_{ij}^{p}(t_{ij}^{p}; X_{ij}^{p}, \nu_i) \tag{4}$$

For each lifetime, the final interpurchase duration is always in progress (censored) at the end of the lifetime if the customer does not make a final purchase and leave at the same time. Therefore, the likelihood of the sequence of J observed interpurchase time durations for an individual i is given by

$$Q_i^{p}\left(t_{ij}^{p}; X_{ij}^{p}, \nu_i\right) = \left[S_{iJ}^{p}\left(t_{iJ}^{p}; X_{iJ}^{p}, \nu_i\right)\right]^{\delta} \left[f_{iJ}^{p}\left(t_{iJ}^{p}; X_{iJ}^{p}, \nu_i\right)\right]^{(1-\delta)} \Pi_{j=1}^{J-1} f_{ij}^{p}\left(t_{ij}^{p}; X_{ij}^{p}, \nu_i\right) \tag{5}$$

where δ is an indicator variable having a value of 0 when the customer purchases and leaves the firm at the same time, and having a value of 1 otherwise.

Model for items purchased

We model the number of items purchased by a customer during a purchase event as a Negative Binomial Distribution (NBD). Negative binomial distribution has been commonly used in the marketing literature to model over-dispersed count data. Therefore, the probability of customer i purchasing n items during a purchase event j is given as:[8]

$$\Pr\left(N_{ij} = n\right) = \frac{\Gamma\left(n + \frac{1}{\delta}\right)}{\Gamma(n+1)\Gamma\left(\frac{1}{\delta}\right)} \Delta_{ij}^{\frac{1}{\delta}} \left(1 - \Delta_{ij}\right)^{n} \tag{6}$$

where $\Gamma(.)$ represents the Gamma function, Δ_{ij} is specified as

$$\Delta_{ij} = \frac{1}{1 + \delta e^{(U_{ij})}} \tag{7}$$

and

$$\begin{aligned} U_{ij} &= \theta_0 + \theta_1\left(\text{Gender}_i\right) + \theta_2\left(\text{Age}_i\right) + \theta_3\left(\text{Salary}_i\right) + \theta_4\left(\text{PromInitial}_i\right) + \theta_5\left(\text{Promotion}_{it}\right) \\ &+ \theta_6\left(\text{InterpurchaseTime}_{ij}\right) + \theta_7\left(t_{ipl}\right) + \theta_8\left(\text{CommitPurch}_{ij}\right) + \theta_9\left(\text{CommitTime}_{ij}\right) \\ &+ \theta_{10}\text{LagItems}_{ij} + \theta_{11}\left(\text{LagItems}_{ij}\right)\left(t_{ipl}\right) + \theta_{12}\text{LagReturn}_{ij} + \theta_{13}\left(\text{LagReturn}_{ij}\right)\left(t_{ipl}\right) + w_i \end{aligned}$$

or $U_{ij} = \theta' X_{ij}^n + w_i$, where X_{ij}^n is the vector of explanatory variables (with the constant term) with each variable having the same meaning as discussed previously except $InterpurchaseTime_{ij}$ which represents the time elapsed between the $(j\text{-}1)$th and the jth purchase events. ϑ's are parameters representing the associated coefficients, w_i represents all the unobserved customer-specific factors that impact the quantity of purchase and is assumed to be distributed normally with mean zero and variance σ_w^2.

Let $L_{ij}(N_{ij}; X_{ij}^n, w_i)$ denote the conditional likelihood (conditional on w_i and X_{ij}^n) of observing N_{ij} items purchased during purchase event j by customer i. Therefore, the conditional likelihood of all the items purchased by customer i during her entire lifetime with the firm is

$$L_i\left(N_{ij}; X_{ij}^n, w_i\right) = \begin{pmatrix} \Pi_{j=1}^{J-1} L_{ij}\left(N_{ij}; X_{ij}^n, w_i\right) & \text{if the last interpurchase time is censored} \\ \Pi_{j=1}^{J} L_{ij}\left(N_{ij}; X_{ij}^n, w_i\right) & \text{if the last interpurchase time is complete} \end{pmatrix} \tag{8}$$

Model for items returned

In the context of our data, returns have to be made at most within a few days of purchase. Therefore, the question of interest is the probability of a customer returning a product from among the purchases made during a purchase occasion, and not the timing of a return.

A customer purchases one or more items from the firm during each purchase occasion. When the customer receives the items that she has purchased (*Items*), i.e. after each purchase, she makes a decision about returning each of these items. Therefore, we model the number of items returned by a customer i from among the purchases made during a purchase event j as having a binomial distribution, as follows:

$$P\left(K_{ij} = k \mid N_{ij} = N\right) = \binom{N}{k} p_{it}^{\ k} \left(1 - p_{it}\right)^{N-k} \tag{9}$$

and

$$\binom{N}{k} = \frac{N!}{(N-k)!k!} \tag{10}$$

where K_{ij} is a random variable representing the number of items returned by customer i from among the total number of items purchased (N_{ij}) during purchase event j, and p_{ij} is the probability of returning each item purchased by customer i during the purchase event j.

We specify p_{ij} as follows:

$$p_{ij} = \Phi\left(Y_{ij}\right) = \int_{u=-\infty}^{Y_{ij}} (2\pi)^{-1/2} \exp\left(\frac{-u^2}{2}\right) du \tag{11}$$

where

$$\begin{aligned} Y_{ij} &= \mu_0 + \mu_1\left(\text{Gender}_i\right) + \mu_2\left(\text{Age}_i\right) + \mu_3\left(\text{Salary}_i\right) + \mu_4\left(\text{PromInitial}_i\right) \\ &+ \mu_5\left(\text{Promotion}_{ij}\right) + \mu_6\left(\text{InterpurchaseTime}_{ij}\right) + \mu_7\left(t_{ipl}\right) \\ &+ \mu_8\left(\text{CommitPurch}_{ij}\right) + \mu_9\left(\text{CommitTime}_{ij}\right) + \mu_{10}\text{Items}_{ij} \\ &+ \mu_{11}\left(\text{Items}_{ij}\right)\left(t_{ipl}\right) + \mu_{12}\text{LagReturn}_{ij} + \mu_{13}\left(\text{LagReturn}_{ij}\right)\left(t_{ipl}\right) + z_i \end{aligned} \tag{12}$$

The variable $Items_{ij}$ represent the number of items purchased by customer i during purchase event j, $InterpurchaseTime_{ij}$ denotes the time elapsed between the $(j\text{-}1)$th and the jth purchase events, and $LagReturn_{ij}$ denotes the number of items returned from among those purchased during the $(j\text{-}1)$th purchase event. The remaining variables have their usual meaning. We denote the vector of explanatory variables in this sub-model by X_{ij}^{r}, and the joint conditional likelihood of all the items returned by customer i from the purchases made during J purchase occasions during the entire lifetime with the firm by $R_i\,(K_{ij}; X_{ij}^{r}, z_i)$.

Joint model

In the model for each customer behavior (i.e. defection, purchase frequency, purchase quantity and return), the realized past outcomes of purchases (*LagItems*), interpurchase time (*InterpurchaseTime*), and returns (*LagReturn*) appear as covariates. To account for the endogeneities of these variables, we jointly model the four behaviors and assume that the customer-specific unobserved factors represented by u_i, v_i, w_i, and z_i follow a multivariate normal distribution (*see* Brien, Lillard, and Waite 1999; Lillard and Panis 1996). We assume that

$$\begin{pmatrix} v_i \\ u_i \\ w_i \\ z_i \end{pmatrix} \sim MVN\left[\begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_v^{\,2} & . & . & . \\ \sigma_{vu} & \sigma_u^{\,2} & . & . \\ \sigma_{vw} & \sigma_{uw} & \sigma_w^{\,2} & . \\ \sigma_{vz} & \sigma_{uz} & \sigma_{wz} & \sigma_z^{\,2} \end{pmatrix}\right] = \mathbf{g}(\mathbf{0}, \boldsymbol{\Omega}) \tag{13}$$

where $\sigma_{uv} = \rho_{uv}\sigma_v\sigma_u$. The other terms are defined similarly.

The marginal likelihood is obtained by multiplying the conditional likelihoods of customer lifecycle, interpurchase times, purchases, and returns, and integrating the resulting conditional likelihood over the range of the unobserved heterogeneity components v_i, u_i, w_i and z_i. In our data, all the lifetime durations are complete. Therefore the marginal likelihood function for an individual i becomes

$$L_i = \int_z \int_w \int_v \int_u \Big\{ \Big[f_i^{l}\left(t_i^{l}; X_i^{l}(t), v_i\right)\Big]\Big[Q_i^{p}\left(t_{ij}^{p}; X_{ij}^{p}, u_i\right)\Big] \Big[L_i\left(N_{ij}; X_{ij}^{n}, w_i\right)\Big]\Big[R_i\left(K_{ij}; X_{ij}^{r}, z_i\right)\Big]\mathbf{g}(\mathbf{0}, \boldsymbol{\Omega})\, du dv dw dz \Big\} \tag{14}$$

Model estimation and results

The model is estimated by full information maximum likelihood (FIML), and we use Gauss-Hermite Quadrature to approximate the normal integrals. This section describes the data and results. First we describe the data used in the research.

Data

The data is obtained from a direct marketing company that sells products only to members. The membership is free, and is open to the general public. At the time of membership initiation, each customer is required to make commitment to purchase some minimum number of items (item purchase commitment) during a given time period (time commitment). This commitment of purchase and time varies across customers depending upon the particular customer acquisition campaign that was used to acquire the customer. The firm traces the history of transactions with each customer throughout the customer lifecycle with the firm, i.e. throughout the customer's

membership. Purchases and returns made by a customer are stochastic from the point of view of the firm until they happen. Also, the total lifecycle of a customer with the firm is not known to the firm with certainty, until the customer defects.

To all new members, the firm offers a discount over the total market price of the bundle of items that they purchase initially, called the introduction package. This discount varies between customers, and among other things depends upon the specific items in the introduction package the customer purchases, and the choices available to the customer at that time. We call this initial promotion *PromInitial*. In addition, customers receive regular promotions from the firm from time to time that we refer to as *Promotions*.

The data used consists of a random sample of 2,000 customers who joined the firm during a year in the late 1990s. This means that we have a total of 2,000 observations on customer lifetimes. By the time the firm provided us the data, all the customers who had joined the firm in the year of the data had defected. Thus there is no censored observation of customer lifetime in the entire population from which we draw our sample. Consequently, all the customers in our data sample have completed lifetimes. In addition, we have data on all the interpurchase times for each customer until the customer terminates the membership, i.e. defects. If we sum the number of interpurchase time spells for each customer, over all the customers in the data, we find that the total number of interpurchase time spells in the data sample is 16,648.

Figure 10.1 shows the histograms of customer lifetime, interpurchase time, the number of items purchased by a customer during a purchase event, and the number of items returned from the purchases made during a purchase event, based on the data sample. Note that the density of *InterpurchaseTime* rises sharply to a peak before falling sharply, ending in a very long

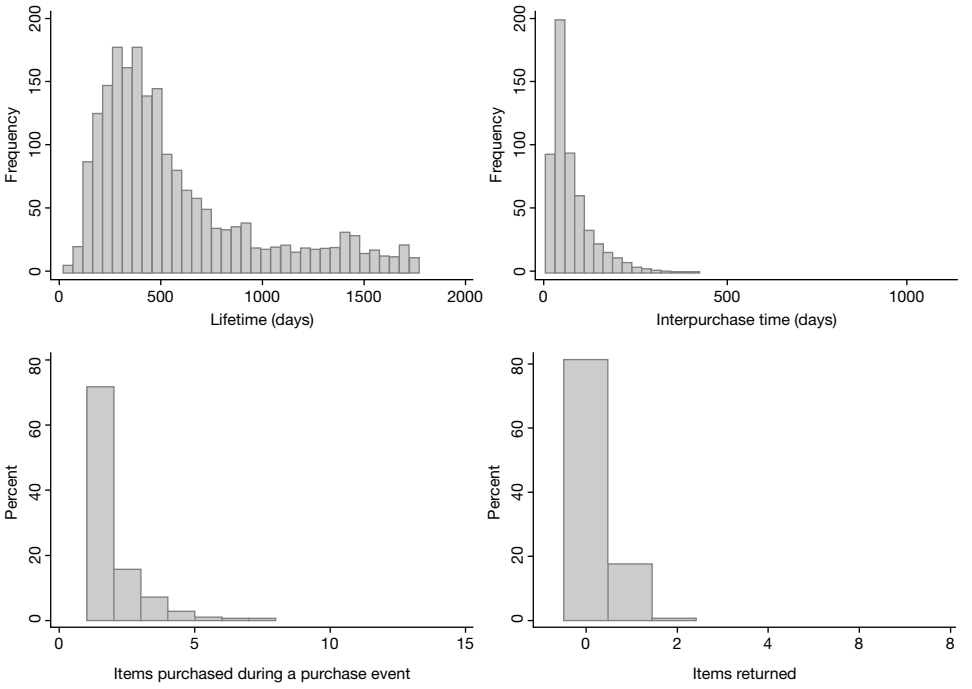


Figure 10.1 Histograms of customer lifetimes (bin size = 50 days), completed interpurchase times (bin size = 20 days), the total number of items purchased by a customer (bin size = 1), and the total number of items returned by a customer (bin size = 1) in the data

and thin tail. The histogram of the total items purchased during a purchase event shows that most customers purchase either one or two items only. Similarly, we can see that most returns consist of one item only.

The average value of *PromInitial* is \$67 (sd = 45) and customers receive an average total of 4.4 (sd = 6.9) promotions (*Promotion*) during their lifecycle. The variable *Lifetime* represents total customer lifecycle duration in days. It has an average value of 589 (sd = 395) days. *InterpurchaseTime* represents time between purchases in days and completed interpurchase time durations have a mean of 65 (sd = 62) days. *Items* denotes the total number of items purchased by a customer during a purchase event and has a mean value of 1.5 (sd = 1.04), and *Returns* denotes the total number of *Items* returned by a customer from the *Items* purchased, and its mean value is 0.2 (sd = 0.45). Since a customer has to decide about returning a purchased item when she receives it, the timing of purchases and returns (if they happen) are about the same. From the average values, we find that 13.33% (= 0.2/1.5) items are returned.

To study the change in behavior when customers fulfill their commitment, we use two variables namely, *CommitPurch* and *CommitTime*. When a customer has not completed purchasing the minimum number of items required to purchase as part of the membership commitment, *CommitPurch* takes a value of 1 and 0 otherwise. Similarly, when purchase events fall within the time commitment, *CommitTime* takes a value of 1 and 0 otherwise. The average value of *CommitPurch* is 0.36 implying that 36% of the purchase events happen when purchase commitment is yet to be met, and the rest fall outside. Similarly *CommitTime* has mean 0.46 implying that 46% of purchase events fall within the time commitment period.

The data that we received from the company was not rich in terms of demographic variables; it only contained *Gender* (68% customers are females, denoted by 1 in the data). We added the variables *Salary* and *Age* to the data using the census information. The variable *Age* for a customer represents the average age of people in the smallest geographical area (in the census) of residence for the customer. We refer to this unit as a *block*. Thus for any specific customer, the value for *Age* is the average age of all the residents of the block where this customer resides (mean value in the sample is 39 (sd = 3.4) years). Similarly, the variable *Salary* represents the average weekly salary of the residents of the block in \$ (mean value in the sample is \$453 (sd = 58) per week), which we use to denote a general unit of currency. In our data sample, almost all the customers reside in different blocks.

In addition to the variables described so far, the other variables used are as follows. *LagItems* represents the number of items purchased during the latest purchase event, *LagReturn* represents the total number of items returned from *LagItems*, and t_{pl} represents the percentage of *t*otal customer lifecycle that has elapsed until the latest purchase event.

Results/findings

We now discuss the findings from the models estimates presented in Tables 10.1 and 10.2.

How do the quantities of purchase and return change as customer lifecycle progresses?

Quantity of Purchase: Purchase behavior has two components: the frequency of purchase and the quantity of purchase during each purchase event. We find that customers purchase more often (i.e. with higher frequency) as their lifecycle progresses. When customers do not return an item or return one item only, the risk of subsequent purchase increases with lifecycle, i.e. the next interpurchase time spell is of shorter duration. If customers return two or more items, the

Table 10.1 Customer defection and interpurchase time models

Customer Defection	*Joint Model Estimation*	*Independent Estimation*	*Interpurchase Time*	*Joint Model Estimation*	*Independent Estimation*
α_2 [Gender]	-0.1387	-0.0721	β_2 [Gender]	-0.0594 *	-0.0583 *
	(0.109)	(0.1143)		(0.0256)	(0.0259)
α_3 [Age]	0.0124	-0.0005	β_3 [Age]	0.0026	0.0025
	(0.0154)	(0.0161)		(0.0041)	(0.0041)
α_4 [Salary]	0.0004	0.001	β_4 [Salary]	0.0004	0.0004
	(0.0009)	(0.0009)		(0.0002)	(0.0002)
α_5 [PromInitial]	0.0002	0.0005	β_5 [PromInitial]	-0.0015 *	-0.0016 *
	(0.0011)	(0.0012)		(0.0003)	(0.0003)
α_6 [Promotion]	-0.0908 *	-0.1017 *	β_6 [Promotion]	-0.0090 *	-0.0093 *
	(0.0118)	(0.0125)		(0.0023)	(0.0023)
α_7 [CommitPurch]	-0.5024 *	-0.5657 *	β_7 [Past Lifecycle = t_{pl}]	0.2395 *	0.2681 *
	(0.1421)	(0.1474)		(0.0639)	(0.0611)
α_8 [CommitTime]	0.3335 *	0.3856 *	β_8 [CommitPurch]	-0.1686 *	-0.1632 *
	(0.1221)	(0.1251)		(0.0322)	(0.0314)
α_9 [LagItems]	-0.0757	-0.0293	β_9 [CommitTime]	0.7640 *	0.7794 *
	(0.0405)	(0.0401)		(0.0309)	(0.0303)
α_{10} [LagReturn]	0.2731 *	0.0429	β_{10} [LagItems]	-0.0486 *	-0.0463 *
	(0.0279)	(0.0243)		(0.0157)	(0.0155)
NOTE: Asymptotic standard errors in parentheses; Significance: '*' = 5%.			β_{11} [LagItems X t_{pl}]	0.0149	0.0211
				(0.0326)	(0.0324)
NOTE: The baseline hazard estimates are provided with the baseline plots in Figure 10.2.			β_{12} [LagReturn]	0.0963 *	0.0750 *
				(0.0189)	(0.0155)
			β_{13} [LagReturn X t_{pl}]	-0.1490 *	-0.1348 *
				(0.0226)	(0.0208)

next interpurchase time spell is of longer duration. We find that customers purchase fewer items per purchase event as their lifecycle progresses. Customers purchase fewer items (one or two items) during a purchase event; they are likely to purchase fewer items during the subsequent purchase event as well. However, when customers purchase three or more items during a purchase event, they are likely to purchase more items during the subsequent event as well.

The issue of change in purchase behavior of customers with time is important as it has implications for customer retention activities of firms. Overall, our results show that although the frequency of purchase increases as customer lifecycle progresses, the quantity of purchase during each purchase event decreases with increase in lifecycle. Therefore, *customers buy smaller quantities more frequently as their lifecycle advances*. This indicates that firm initiatives that facilitate purchase and return of smaller quantities of products would be more attractive to customers more advanced in their lifecycle. Examples would be initiatives related to shipping costs.

Quantity of Return: Results show that *customers return more items as their lifecycle advances*. This is an interesting and surprising finding given the focus of firms on customer retention programs that aim to increase customer lifecycle with a firm. Most of the discussion concerning customer lifecycle has ignored product returns. This result has a direct implication for the firm in terms of the cost of the customer–firm relationship. The firm has to manage the products return process and deal with the returned product. Our result implies that such costs per item purchased are likely to rise with customer lifecycle.

Table 10.2 Quantities of purchase and return models

Quantity of Purchase	*Joint Model Estimation*	*Independent Estimation*	*Quantity of Return*	*Joint Model Estimation*	*Independent Estimation*
Θ_0 [Constant]	-0.9772 *	-1.0137 *	μ_0 [Constant]	-0.7173	-0.1803
	(0.4038)	(0.4025)		(0.3911)	(0.3562)
Θ_1 [Gender]	0.0568	0.0631	μ_1 [Gender]	0.1130 *	0.1069 *
	(0.0516)	(0.0519)		(0.0518)	(0.0488)
Θ_2 [Age]	0.0091	0.0079	μ_2 [Age]	-0.0197 *	-0.0217 *
	(0.0074)	(0.0073)		(0.0074)	(0.0067)
Θ_3 [Salary]	0	0	μ_3 [Salary]	0.0003	0.0001
	(0.0005)	(0.0005)		(0.0004)	(0.0004)
Θ_4 [PromInitial]	0.0016 *	0.0012 *	μ_4 [PromInitial]	-0.0028 *	-0.0020 *
	(0.0006)	(0.0006)		(0.0005)	(0.0005)
Θ_5 [Promotion]	0.004	0.0035	μ_5 [Promotion]	-0.0171 *	-0.0114 *
	(0.0044)	(0.0042)		(0.0037)	(0.0036)
Θ_6 [InterpurchaseTime]	0.0014 *	0.0009 *	μ_6 [InterpurchaseTime]	0.0001	0.0008 *
	(0.0003)	(0.0003)		(0.0002)	(0.0002)
Θ_7 [Past Lifecycle = t_{pl}]	-0.5789 *	-0.2964 *	μ_7 [Past Lifecycle = t_{pl}]	1.2221 *	0.7125 *
	(0.1108)	(0.1033)		(0.0855)	(0.0809)
Θ_8 [CommitPurch]	-1.0983 *	-1.0420 *	μ_8 [CommitPurch]	0.0697	-0.0259
	(0.0553)	(0.0546)		(0.0382)	(0.0369)
Θ_9 [CommitTime]	0.2559 *	0.3365 *	μ_9 [CommitTime]	0.0573	-0.1192 *
	(0.0581)	(0.0573)		(0.0378)	(0.0374)
Θ_{10} [LagItems]	-0.1544 *	-0.1602 *	μ_{10} [Items]	-0.2579 *	-0.2839 *
	(0.0331)	(0.0327)		(0.0075)	(0.0062)
Θ_{11} [LagItems X t_{pl}]	0.2316 *	0.2352 *	μ_{11} [Items X t_{pl}]	-0.0885 *	-0.1079 *
	(0.0519)	(0.0519)		(0.0259)	(0.0247)
Θ_{12} [LagReturn]	-0.0464	-0.1175 *	μ_{12} [LagReturn]	-0.0393 *	0.0149
	(0.0332)	(0.0295)		(0.0166)	(0.0166)
Θ_{13} [LagReturn X t_{pl}]	0.0655	0.0923 *	μ_{13} [LagReturn X t_{pl}]	-0.0317	-0.0458 *
	(0.0419)	(0.0424)		(0.0213)	(0.0203)
δ	1.2070 *	1.2140 *	NOTE: Asymptotic standard errors in parentheses;		
	(0.0532)	(0.0527)	Significance: '*' = 5%.		

Relationship between Purchase and Return: We find that the likelihood of returning an item decreases with increase in the number of items purchased by customers. Further, the result strengthens with increase in customer lifetime with the firm. Therefore, customers with longer elapsed lifetime with the firm are even less likely to return an item when they purchase more quantity during an occasion.

It is commonly believed that when customers purchase more, they return more. For example, a normative study by Bell and Chen (2009) assumes that returns increase with the quantity sold to analyze the impact of customer returns on pricing and order decisions. Petersen and Kumar (2009) find that customers who spend more in one period return more in the next period. Our study investigates the probability of returning an item and finds that this probability decreases when customers purchase more items. One explanation for this result can be that returning an

item is a hassle that one wants to avoid, particularly in the case of catalog sales. A person would tend to purchase more items when he/she is relatively sure of her requirements, and thus he/she is less likely to return a purchased item. We want to underscore that this study does not investigate the amount spent. Also, we do not investigate the total returns. In our study, although the likelihood of returning an item decreases with increase in the quantity of purchased items, the total items returned might increase when more items are purchased consistent with the findings and assumptions in the extant literature.

In our investigation of the relationship of returns with the quantity of subsequent purchase, we find that returns have no relationship with the quantity of purchase in the subsequent purchase event. However, during approximately the first 65% of lifecycle, customers purchase sooner after they return, while during the remaining lifecycle they take longer to purchase after a return. The result indicates that customers tend to replace the items returned during the early part of their lifecycle. However, returns during the latter part of their lifecycle are not replaced and customers in this case take longer to repurchase. Therefore, returns by customers when they are more advanced in their lifecycle are more harmful to the firm. One implication for the firm is that it should increasingly put in more effort to decrease returns by customers who are more advanced in their lifecycle.

We find that if customers return items from one purchase event, they are less likely to return an item from the subsequent purchase event. Perhaps the experience of returning makes customers cautious. Note that Petersen and Kumar (2009) in a different context study the amount of return and find that returns in one period are positively related to returns in the next period. Our results show that *returns from one purchase event are negatively related to returns from subsequent purchase event*.

What is the relationship of purchases and returns with customer defection?

Our results show that *the risk of a customer defection increases by approximately 31% with each item returned by the customer, and this risk is not significantly related to the number of items purchased*.

Since the risk of defection increases when customers return items, returns are bad from a customer retention point of view. An implication for the firm is that it should focus on reducing returns if customer retention is a priority. In the extant literature, Reinartz and Kumar (2003) do not find support for the hypothesis that higher returns lead to shorter profitable lifetime duration, in a noncontractual context. In fact, they find that higher returns lead to longer profitable lifetime duration. Note that the estimated profitable lifetime duration in a noncontractual context is fundamentally different from actual customer lifecycle duration in a contractual context that we study here.

What is the relationship between purchase commitments and customer purchases, returns, and defection?

Results imply that customers purchase fewer items during a purchase event while still under the purchase commitment. Once this commitment is fulfilled, they purchase more items during a purchase event. Further, the return behavior of customers is not related to their commitment status. We also find that customers have shorter interpurchase times (i.e. higher purchase frequency) and are at a lower risk of defection when they are still under the commitment to purchase.

Purchase commitments are used an instrument to promote purchases and enhance customer value. We find that while customers are still under their purchase commitments, they purchase

fewer items on each purchase occasion, but purchase more often. Therefore, the net impact is not straightforward and would depend upon the purchase quantity and frequency, which varies across customers. However, while still under commitment, customers are at a lower risk of defection. Therefore, these *commitments help retain customers* and are beneficial in that sense.

In addition to answering the research questions, our results provide other insights that we now discuss.

Customer Defection: The risk of customer defection is modeled as a semi-parametric proportional hazard model where the baseline log-hazard is formed by piecewise linear splines. These splines (linear line segments) have varying slopes between nodes at different times in a customer's lifetime. We selected the nodes in the lifetime model at days 150, 300, 600, and 1200 of customer lifetime with the firm.[9] Figure 10.2 displays the plots of the baseline hazard and the corresponding baseline probability density function of customer lifecycle obtained from the estimates of the joint model. We find that the risk of customer defection increases with varying rates until day 1200 of lifetime, after which it increases very rapidly. We find that the risk of defection decreases with increase in promotions. Therefore, promotions help retain customers.

Interpurchase Time: Figure 10.2 shows the baseline hazard estimates of the model for interpurchase time, and the plots of the baseline hazard and density function of interpurchase time. These estimates are interpreted as those for the baseline hazard of the lifecycle model.[10] The estimated density function of interpurchase time closely approximates the empirical density of interpurchase time presented in Figure 10.1. The complex distribution of interpurchase time cannot be modeled easily using standard parametric distributions, and therefore shows the appropriateness of our use of a semi-parametric model to approximate it. Figure 10.2 shows that the risk of purchase first increases very rapidly up to approximately 75 days and then falls relatively slowly with time. This non-monotonic pattern of the risk of purchase is consistent with previous research (Jain and Vilcassim 1991).

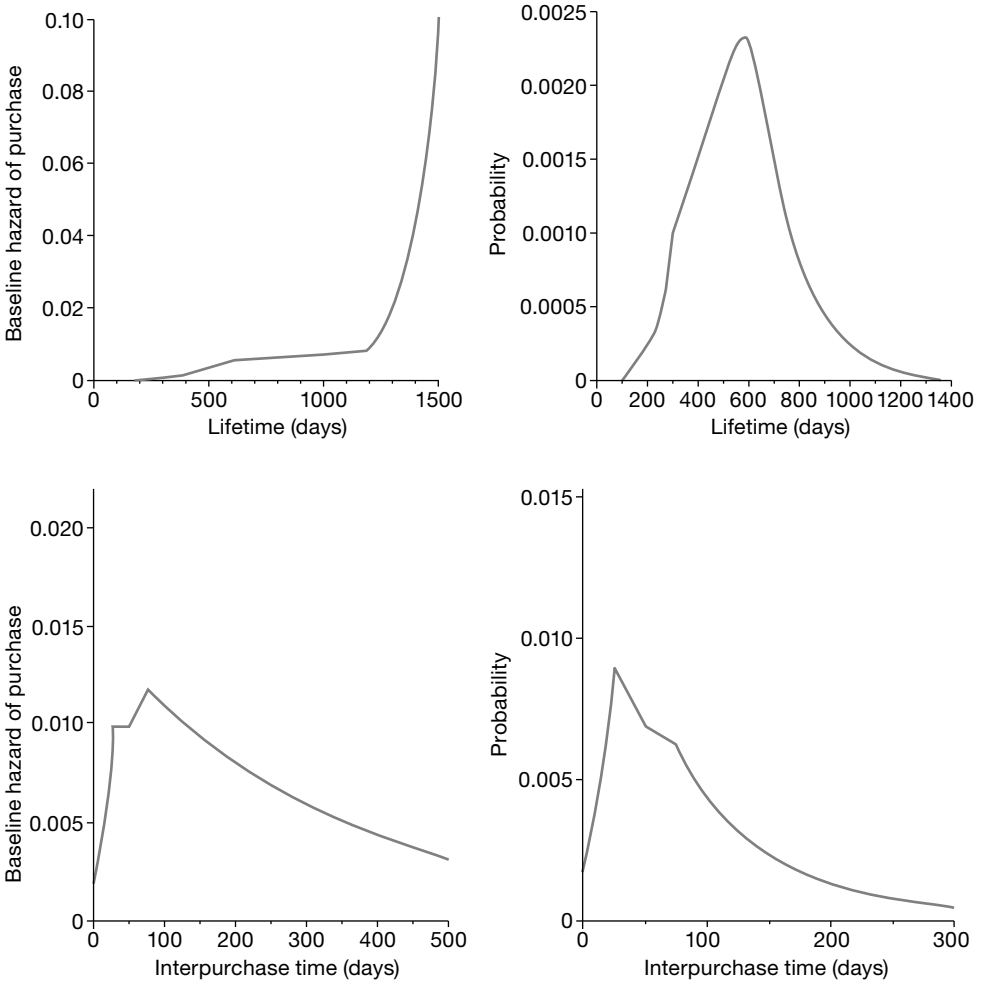
The results show that female customers purchase less frequently compared to males. Customers take more time to purchase when they receive higher initial promotion and other promotions. Perhaps these promotions make customers aware of more offerings resulting in them spending more time to evaluate these offerings, and therefore taking more time to purchase.

Quantity of Items Returned: We find that female customers return more and older customers return fewer items. When customers receive higher initial promotion and other promotions, they return fewer items. This is an unexpected benefit of all promotions that our results uncover. Perhaps promotions educate customers about the offerings leading to better match between customer expectations and items purchased thereby reducing returns.[11]

Summary and future research

In this chapter we focus on customer management that requires firms to understand customer purchase behavior over their lifecycle with the firm, and evaluate customers to target them for appropriate marketing actions. In our discussion, we have presented results from our study that uses data on customer purchase and return behavior over the entire duration of customer–firm business relationship, in a unique contractual context not studied in depth but common in practice. Our study has focused on customer purchases, returns, interpurchase time, and defection. Some of our main findings are as follows.

We find that the relationship between lifecycle and purchase quantity cannot be generalized. In our data, generally customers buy smaller quantities more frequently as their lifecycle advances. Further, customers return more items as their lifecycle advances. This surprising result



Lifecycle	*Joint Model Estimation*	*Interpurchase Time*	*Joint Model Estimation*
α_0 [Constant]	-15.0925 *	β_0 [Constant]	-6.3289 *
	-1.1113		-0.2234
α_{11} [D0-150]	0.0396 *	β_{11} [DUR0-25]	0.0691 *
	-0.0047		-0.0018
α_{12} [D150-300]	-0.0153 *	β_{12} [DUR25-50]	-0.0004
	-0.0015		-0.0012
α_{13} [D300-600]	0.0056 *	β_{13} [DUR50-75]	0.0070 *
	-0.0007		-0.0012
α_{14} [D600-1200]	0.0007 *	β_{14} [DUR75+]	-0.0031 *
	-0.0003		-0.0002
α_{15} [D1200+]	0.0082 *	NOTE: Asymptotic standard errors in parentheses; Significance: '*' = 5%.	
	-0.0006		

Figure 10.2 Plots of the baseline hazard and probability density of customer lifecycle (top two plots) and interpurchase time (bottom two plots).

indicates that the cost of managing returns per purchased item will rise as customer lifecycle advances. These results suggest that initiatives by the firm that focus on reducing returns and shipping costs are likely to be more attractive to customers who are more advanced in their lifecycle.

Our study and the extant literature suggest that customer purchase, return, and defection behavior are context dependent. In our unique research context (B-C context where customer defection is observed but other customer behavior is not known to the firm a priori), all customers eventually defect, perhaps due to decrease in interesting product options over time. In other contexts such as grocery retailing, it can be legitimately argued that the longer a customer purchases from the retail outlet, the lower would be the likelihood of defection due to reasons such as increased familiarity with the outlet and its promotions leading to reduced cost of purchases (both time and amount spent). Therefore, customers might increase their spending at the outlet over time, and return less, in contrast with our findings. Rust, Kumar, and Venkatesan (2011) study a B-B context and find evidence that some customers might have low value at one time but can evolve into higher value customers over time. Finally, in a B-C context of newspaper and magazine subscriptions, longer customer lifetime implies higher CLV but customer purchase behavior remains unchanged with time. All these examples underscore our argument that the firm has to understand customer purchase behavior in its context before it can effectively manage customers. Other studies can give additional insights into customer lifetime purchase behavior.

We find that returns increase the risk of customer defection. Returns by customers who are more advanced in their lifecycle are more harmful to the firm since these returns further increase the already higher risk of customer defection and these customers take more time to repurchase compared to customers who are relatively early in their lifecycle. Therefore, the firm should not treat all returns equally and should focus more on reducing returns by customers who are more advanced in their lifecycle. When customers purchase more quantity, the probability of returning each item decreases. Clearly, customers are relatively more careful when they buy higher quantity. This implies that the firm should promote higher quantity purchases to reduce the percentage of returns. Regarding commitments, we find that under purchase commitments, customers purchase fewer items on each purchase occasion, purchase more often, and are at a lower risk of defection. Therefore, commitments do ensure that customers are retained by the firm.

The results show that female customers purchase less frequently and return more compared to males. This suggests the possibility of use of gender-specific marketing actions to increase sales and reduce returns. Finally, since younger customers return more items, promotions focused on the younger customers might help the firm reduce returns.

Overall, we find that customer purchase and return behavior can be complex and context dependent. Therefore, a company needs to understand them using appropriate methods before formulating a customer management strategy. Our understanding of purchases and returns and their relationship with customer profitability over time is still evolving, and more empirical research in different contexts should help generate new insights and generalize the previous findings (Boulding, Staelin, Ehret, and Johnston 2005).

The research that we have discussed so far uses a traditional CRM database. Our business environment is changing radically due to new technologies and evolving customer behavior. In light of these factors, should firms continue to consider the concept of customer value as before or should they modify their understanding? We now share our thoughts on this issue and present a framework for analyzing customer relationships that is better suited to our new reality.

An understanding of customer purchase behavior and estimation of customer lifetime value are both important for effective customer management strategy. So far, we have primarily discussed issues related to understanding of customer purchase behavior over lifecycle with the firm. These have been traditionally used as input to different models of CLV (i.e. customer lifetime value) in both contractual contexts and noncontractual contexts. Singh and Jain (2010) provide a detailed discussion of the models of CLV in the extant literature, and present a framework for selecting a model based on the context and data available in the CRM database. Therefore customer value is primarily based on the purchase and return behavior of customers since these databases contain information only about the customer-firm interactions over time.

In the current environment, new technologies (e.g. social media, mobile marketing) have changed customer behavior in ways that have important consequences for the firm and customer value. The concept of customer lifetime value remains relevant and important, however, how we apply it in practice (e.g. the inputs to the estimation of CLV) has become more complex. The true value of a customer is no longer reflected only in purchases and returns by the customer, but also by other actions that a customer may take. Examples of such actions are positive or negative word of mouth about the firm, advocacy of the firm and its offerings on social media, technical support provided in online communities, ideas for product development and new offerings, etc.

A customer might purchase less and thus have a lower value in the traditional CRM database of the firm, but might be highly active as an advocate of the firm on social media. This in turn implies that the firm should treat the customer as high value customer due to the indirect benefits it can get from her. Traditional CRM approaches were not geared to handle this complexity, and these factors were not as important earlier both for research and practice. The new reality makes it important to reevaluate our understanding of customer purchase behavior over lifecycle with the firm, and customer lifetime value the most popular metric to evaluate decisions in CRM.

Let us start with customer lifetime or lifecycle with the firm. Traditionally, customer lifetime has been simply the duration of the customer–firm business relationship. A firm could observe it (i.e. contractual contexts) or not observe it (i.e. noncontractual contexts). This categorization was useful because most of the key inputs to CLV estimation other than lifetime duration were available in the firms' databases and estimating CLV meant making a decision about lifetime—the one challenge if customer defections were not observed. We now know that customers may be significantly valuable to the firm in many ways, and purchases are just one of them. Say, a customer stops purchasing from a firm, and continues to be an advocate of the firm on social media, should we consider the customer to have defected? Or from the point of view of customer lifetime value, should we consider different types of customer lifetimes where the traditional lifetime is one of them?

Similarly, since customers can be valuable to a firm in many different ways, traditional customer lifetime value is now just one type of value, and can be considered as customer "purchase value". We can have other types of values such as "advocate value", "technical support value", and so on. Gupta, Lehmann, and Stewart (2004) show that the firm value is closely related to the value of its customers. From the point of view of our discussion here, the firm value would refer to the customer "purchase value" that directly creates revenues for the firm.

If a firm had some measure of these different types of values that it can assign to groups of people (customers, prospects, and others), then it could appropriately design its strategies (e.g. product development, marketing) focusing on the most valuable "customers" in the appropriate area. For example, if the firm is collecting ideas for product development, then people who have the most value for the firm in that area would be the ones to focus upon. Naturally, a person can

have more than one type of value and her value to the firm would be the sum total of all these value components. Say the firm has identified three value components, namely, "purchase value", "advocacy value", and "technical support value". Each person relevant to the firm (customer, prospect or otherwise), can be plotted on a 3D chart with each value component forming one of the three axes. For specific decisions, the firm can focus on relevant value components only.

Three questions become relevant at this time. How many different value components are there? How can the firm identify people having different types of value components? And how can it measure the value of a person along each value component?

No measure of customer value is perfect. A firm must do what it can do to the best of its ability and resources, and improve over time. A firm can identify the most important groups of people that impact its business. Those who purchase are certainly part of this group. There are other groups as mentioned earlier. If it cannot identify and interact with some groups of people who are valuable, then it might be practical to ignore them until it has the ability to harness their potential.

Once it has identified such groups of people through interaction with them or through their activities on the web and social media, it should focus on individuals in each group to estimate their value along each value dimension that the firm considers important. The easiest value to measure is the traditional customer lifetime value, represented by the "purchase value" here. The estimation of other value components is challenging, and still a research issue. For example, how can the firm measure value of social advocacy? However, that does not mean that the firm cannot use the concept to its advantage. Some assessment based on subjectivity as well as objective measures can be useful. For example, in evaluating advocates, the firm could consider how many people are connected to the advocate (via blog, twitter, etc.) and the efforts it has to expend in cultivating relationship with the advocate. Some index based on this reach and cost can be used to rank order all the advocates.

Value components other than "purchase value" ultimately create customer purchase value or reduce the cost of the firm (e.g. by reducing cost of technical support and promotions). They allow opportunities for firms to improve upon their customer management strategy. Research linking these other types of customer values to customer purchase value and cost reduction would allow firms to estimate these value components better and use them appropriately. Evidence suggests that even in the absence of sophisticated methods, firms are using simple heuristics to rank customers based on these different types of value components. For example, firms now select online advocates based on their reach and activism and then seek their support for promotions, new product launches, positive word of mouth, and neutralizing negative word of mouth. Firms select and reward people most active in providing technical support to their customers. All this is akin to the traditional use of some proxy for customer value such as forms of Recency, Frequency, and Monetary (RFM) framework.

The area of customer relationship management is rich and significant research has led to important developments for practice. For further readings in this area, we suggest *Customer Relationship Management: Concept, Strategy, and Tools* by Kumar and Reinartz (2012), which provides an extensive treatment of the strategic and tactical aspects of customer relationship management as we know it today, "Referral Programs and Customer Value" by Schmitt, Skiera, and Bulte (2011), which investigates the extent to which referred customers are more profitable and more loyal, and "Measuring Customer Lifetime Value: Models and Analysis" by Singh and Jain (2010) which is an exhaustive survey of models of Customer Lifetime Value.

Our discussion so far highlights issues that the traditional concepts of "customers" and "lifetime" cannot appropriately address. First, not all those who are valuable to the firm would be its customers. Therefore, to effectively apply the idea behind the concept of customer value,

it has to be broadened to include all those who impact the firm and its offerings. Perhaps some term such as "stakeholders" might be more appropriate. Second, how we estimate "stakeholder" lifetime itself would be different for different value components. For "purchase value", traditional customer lifetime estimates would remain valid. For other stakeholders this might change. For example, in the evaluation of "advocate value" the lifetime of an advocate would be how long she remains an advocate of the firm and its related issues. Naturally, a firm would want to focus its limited resources on engaging those who have more influence and who are expected to continue their advocacy for a longer time period. In summary, our argument is to broaden the fundamental concept of customer lifetime value based on new realities. We have presented ways in which this can be done to make it more relevant to practice. We hope that our arguments for moving from "customer lifetime value" to the new framework of "stakeholder lifetime value" would help companies understand the next stage of evolution of this area.

Notes

1 The numerous articles related to customer management address many issues within the field such as *measurement of customer lifetime value* (e.g. Singh, Borle, and Jain 2009; Fader, Hardie, and Lee 2005, (a) and (b); Rust, Lemon, and Zeithaml 2004; Gupta, Lehmann, and Stuart 2004); *study of the drivers of customer value* (e.g. Bechwati and Siegal 2005; Venkatesan and Kumar 2004; Verhoef 2003; Berger, Bolton, Bowman, and Briggs 2002); *customer loyalty programs* (e.g. Shugan 2005; Lewis 2004; Kim, Shi, Srinivasan 2001; Dowling and Uncles 1997); and *customer acquisition and retention* (e.g. Capraro, Broniarczyk, and Srivastava 2003; Thomas 2001; Berger and Bechwati 2001; Blattberg et al. 2001).
2 Some examples of studies in contractual contexts are Thomas (2001), Bolton (1998), Bhattacharya (1998), and Bhattacharya, Rao, and Glynn (1995).
3 The operations and supply chain literature has focused extensively on reverse logistics (e.g. Stock and Mulki 2009; Chen and Bell 2009; Guide Jr, Souza, Wassenhove, and Blackburn 2006). Our focus here is on the marketing related issues.
4 Note that *profitable lifetime duration* in a noncontractual context is different from the known *total customer lifetime* in a contractual context that we investigate. There is no research that has investigated the relationship between the profitable lifetime duration and total customer lifetime with the firm.
5 Strictly speaking, the event of a purchase is not a risk in the literal sense of the word. However, we use the terminology common in the literature of duration models.
6 Seetharaman (2004) finds that the estimates of covariate parameters under the proportional hazard model are sensitive to alternative parametric specifications of the baseline hazard.
7 We normalize time in this manner because we want to study the purchase and return behavior over the entire customer lifecycle (i.e. entire duration of customer–firm business relationship). Although this normalization allows us to make statements about how customer behavior and its impact changes over entire customer lifecycle, it makes it difficult to predict behavior using the model. Note that prediction is not our objective in this study.
8 We subtract one from the actual number of items purchased to estimate this model.
9 Our choice of nodes was guided by managerial interest and judgment. Given the empirical distribution of customer lifetimes, nodes at these days are likely to provide a good approximation of the baseline hazard. More nodes will provide a more detailed picture of the baseline duration dependence and increase the number of parameters.
10 As in the defection model, we set up the nodes of the baseline duration splines in this model at 25, 50, and 75 days since the time of last purchase.
11 Our estimates of the unobserved heterogeneity components and their correlations are all significant indicating that joint modeling of these customer-level outcomes is appropriate.

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11

Unconventional marketing

From guerrilla to consumer made

Bernard Cova and Marcel Saucet

Abstract

Unconventional marketing is a term that describes transformational approaches that seek to turn entrenched assumptions of marketing on their head. Over the last 30 years, many nebulous epithets characterizing unconventional marketing have come into play, all more obfuscating than clarifying. The chapter offers a conceptual framework which integrates these many epithets in a time perspective. The past wave of unconventional marketing, associated with *guerrilla marketing*, confronted the convention wherein the impact of a communication campaign should be directly proportional to the budget invested. Today's wave, associated with *street marketing*, breaks with the conventional wisdom that the field of marketing is confined to a home/point-of-sale dichotomy. The emergent third wave, concerning offers being *consumer-made*, will confront a prevalent marketing convention born of the economy itself: the separation between the production and consumption spheres. On this basis, the chapter introduces a specific research agenda paving the way for the future.

Key words

Community, consumer made, co-creation, guerrilla, street marketing, unconventional marketing.

Introduction

The idea of unconventional marketing appeared in the 1980s, when marketing was undergoing what has been called its "midlife crisis" (Brown, 1995). To get out of this crisis of efficiency, marketing actors had to find new methods that broke with those dominating the textbooks at the time. Relational marketing (Grönroos, 1994) presented itself as a viable alternative and came to be part of the new marketing paradigm. Nevertheless, other alternative approaches also sought to address this midlife crisis (Badot and Cova, 2008) by breaking with certain conventions of the field. *Guerilla marketing* (Levinson, 1984) in particular has opened the way for numerous unconventional approaches of communication dealing exclusively with "below the line" media when conventional marketing focused quasi exclusively on "above the line" media. Over the last 30 years, many nebulous epithets characterizing this unconventional stream have come into play, all more obfuscating than

clarifying. Thus, the first aim of this chapter is to offer a conceptual framework in order to integrate these many epithets in a coherent whole which is developed in the first part (Macinnis, 2011).

Then, the chapter considers "unconventional" as a label which goes beyond this bulk of alternative communication approaches. Unconventional means "not bound by or not in accordance with convention" according to the Merriam-Webster dictionary. There are several major conventions at play in marketing management. The first one is that marketing happens through media or at the point of sale. The second one – which is central to the discipline – is that there are two clearly defined major actors in a marketing exchange: the buyer and the seller, or, in other words, the consumer and the producer. Thus, the chapter observes that the first convention is already challenged by the development of street marketing approaches. Indeed, what we call street marketing is a redirection of marketing efforts towards a space where meaningful consumer experiences take place today: the street. These approaches go beyond the media/point-of-sale dyad that has long structured mainstream marketing, as we will see in the second part.

Finally, the chapter envisions that in a near future the central convention of marketing which inheres in the economy itself – that of the separation of the production and consumption spheres – will rapidly break down. The removal of this frontier between producer and consumer makes possible the development of unconventional marketing approaches based on collaboration between producers and consumers, as we will see in the third part.

All in all, the chapter aims at making a conceptual contribution that frames three periods of unconventional marketing approaches (Macinnis, 2011): the past period characterized by "below the line" communication alternatives; the current period characterized by the mobilization of the street; the forthcoming period marked by the development of consumer made actions.

I/ Past: Unconventional marketing as guerrilla marketing

Origins of unconventional marketing

Many communication approaches are considered by their practitioners to be unconventional or alternative approaches. For the perpetual flow of new terms describing these approaches, the term *guerrilla marketing*, introduced in 1984 by Jay Conrad Levinson, has come to serve as an umbrella term. Levinson (1984) defines guerrilla marketing as the art of being able to execute marketing activities, in unconventional ways, mobilizing imagination more than money.

To reach this goal, guerrilla marketing has revived several pre-Kotlerian methods of communication: word of mouth, the sandwich man, subliminal advertising, etc. For a long time, the term guerrilla marketing existed in the popular language to designate every unconventional marketing approach (Baack, Wilson and Till, 2008; Hutter and Hoffmann, 2011). In fact, these kinds of promotional and communication campaigns broke the habits of companies and consumers, passing from traditional platforms to original and more attractive ones. Common among all these approaches is the intent to achieve equal and even superior communication outcomes compared to conventional approaches, but with less expenditure: "It allows firms to promote their products and services with very low budgets and still reach the same levels of awareness that are usually only achievable with high-frequency TV advertising" (Kaplan and Haenlein, 2011, p. 254). Furthermore, "It is considered to be a viable alternative to conventional advertising because it is perceived as softer and more personal than traditional advertising" (Kaikati and Kaikati, 2004, p. 6).

Four major approaches of unconventional approaches

During the last thirty years, following the publication of Levinson's (1984) pioneering book, guerrilla marketing has structured itself according to four principal types of unconventional

communication (see Figure 11.1): one type that has seen massive development during the last decade is known as *viral marketing*; a second type, called *ambush marketing*, recycles approaches originating in sports marketing; a third type, *stealth marketing*, responds to the current trend of de-commodification of communication; and a fourth type, which reaches consumers through a presence on the street and in public spaces, is called *ambient marketing*. These four principal types of unconventional communication are interdependent and encompass other similar types, as detailed below.

Viral marketing. The origins of viral marketing can be found in buzz marketing and practices that arose from the pioneering work of Katz and Lazarsfeld in the 1950s, who examined the potential for consumers to influence one another. Kaplan and Haenlein (2011, p. 255) define viral marketing as "electronic word-of-mouth whereby some form of marketing message related to a company, brand, or product is transmitted in an exponentially growing way, often through the use of social media applications". In 2010, the brand Tipp-Ex launched a viral campaign called "A Hunter Shoots a Bear". This interactive campaign allowed Internet users to erase the word "shoots" from the title and replace it with another active verb, leading to one of 42 possibilities, which were then depicted in short videos (for example, if the user wrote "a hunter plays football with a bear," a video of a football game between the hunter and the bear appeared on the screen). Posted on Facebook, this entire series of videos was relayed by thousands of users who posted it on their own Facebook pages. The buzz picked up very quickly and went on to generate more than 16 million views on YouTube (http://www.youtube.com/watch?v=4ba1BqJ4S2M). Viral marketing is similar to buzz marketing.

Stealth marketing. This form of communication has its origins in subliminal advertising, a practice that was denounced in 1967 by Vance Packard in his book, *The Hidden Persuaders*. "Stealth marketing is a deliberate act of entering, operating in, or exiting a market in a furtive, secretive or imperceptible manner, or an attempt to do so" (Roy and Chattopadhyay, 2010, p. 71).

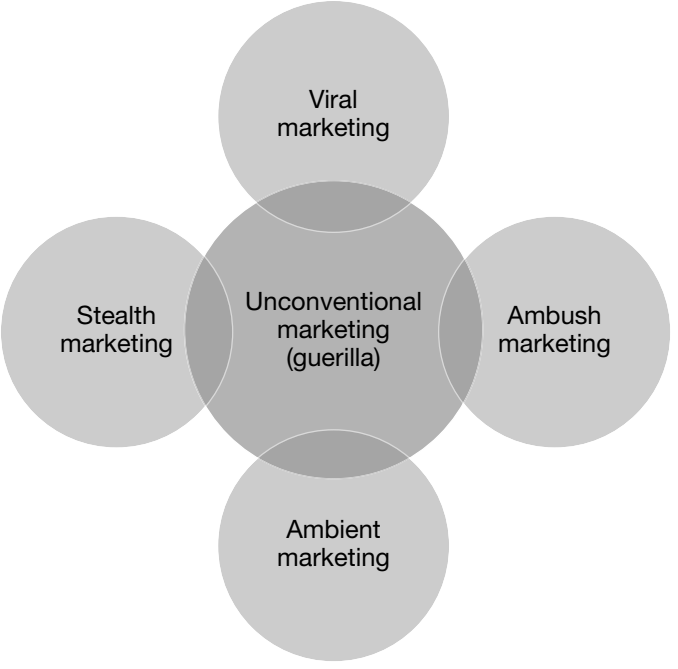

Figure 11.1 The four major approaches of unconventional marketing. Source: Authors

Stealth marketing is also known as *undercover marketing* or *covert marketing*. The goal of this form of marketing is to promote a product or service without clearly presenting the brand name. Consumers confronted with this kind of operation do not immediately understand which brand is behind the campaign. Sony Ericsson used stealth marketing in the US to promote its T68i phone in 2003 through the "Fake Tourists" campaign (http://www.onthegroundlookingup.com/film/): fake tourists asked people to take their photo in front of major city sights while handing over their T68i (the first phone in the US with an integrated camera).

Ambush marketing. The origins of ambush marketing can be traced to the Los Angeles Summer Olympics in 1984, when some companies that had not been approved by the IOC tried to harness the buzz surrounding the international event in their own promotional activities. "Ambush marketing is a form of associative marketing, utilised by an organisation to capitalise upon the awareness, attention, goodwill, and other benefits, generated by having an association with an event or property, without that organisation having an official or direct connection to that event or property" (Burton and Chadwick, 2009, p. 305). It is also known as *parasitic marketing*. For example, the underwear brand Dim took advantage of a rugby match between France and Ireland in 2007 to promote its own products. To achieve this, they circulated an image of attractive young women supporting the French team in just their underwear. The strategy paid off: the buzz grew very quickly and the picture, which clearly benefited from the excitement surrounding the international match, was relayed many times on the Internet, despite the lack of approval from the International Rugby Board.

Ambient marketing. This kind of unconventional marketing operation has its origins in the "sandwich man" – a promoter who takes a brand's message to the street – and painting walls with brand imagery on the roadside. "Ambient communication is a complex form of corporate communication that uses elements of the environment, including nearly every available physical surface, to convey messages that elicit customer engagement" (Gambetti, 2010, p. 34). For example, in 2009, the Copenhagen Zoo in Denmark worked with communication agency Bates Y&R to create a bus covering which made it appear that a snake was constricting the vehicle (see Figure 11.2). This example is representative of the effectiveness of ambient marketing as a way to promote a product or a service through the customization of a public space or object.

All in all, unconventional marketing approaches developed in the last 30 years do not pretend to represent "a paradigm shift, a transformation like nothing before" (Achrol and Kotler, 2012, p. 50), they just represent an alternative way of doing communication. This way differs from conventional "below the line" approaches such as outdoor campaign, sponsorship, sales promotions, etc., by the emphasis put on incorporation in the consumer lived experience and its context. This is eased by the playfulness and recreational dimensions of the unconventional approaches as we will see with the following case study.

A case study on the impact of unconventional marketing

Heineken launched an unconventional marketing operation during the Champions League in 2010 – specifically, during a match between Real Madrid and AC Milan. In this case, the consumers were unaware that this event was part of a communication campaign (i.e., stealth marketing). The objective of the operation was to generate maximum buzz. More than 100 women lured their boyfriends, all fans of AC Milan, pushing them to abandon their plan to watch the Champions League final and instead go to a concert of classical music and poetry. Fifty professors also pushed their students to attend this concert instead of watching the match. Some journalists were also lured by their bosses. In the majority of the cases, participants were required to be joined by their girlfriends (who used the excuse that the place had been

Figure 11.2 The Snakebus (reproduced with permission of Bates Y&R Copenhagen)

recommended by their father for a fantastic concert). In all, nearly 200 people were enlisted by the brand with the aim of trapping more than 1,000 fans of AC Milan in a room together.

For the event, Heineken rented a concert hall sufficient to house the maximum number of people. The curtain went up, revealing an orchestra playing hypnotic music and a giant screen displaying various messages. After 15 minutes, the Heineken operation began to unfold. The orchestra started to play the theme music of the Champions League. Some messages appeared on the screen: "difficult to say no to his girlfriend," "difficult to resist his boss." The trapped football fans began to realize what was going on. An ultimate question made the operation clear: "how could you think we would force you to miss the match?". The public started to applaud. The title screen displayed "enjoy the match with Heineken," after which the match appeared on the screen. The room was effervescent – a moment of genuine pleasure that was dominated visually by the Heineken logo.

This operation had an enormous impact. A mere 1,136 viewers were lured into the concert hall, and whereas 1.5 million people watched the match live on Skysport, a full ten million people saw the Heineken operation the next day on local news. Within two weeks, more than five million visitors had learned about the operation on the Internet, where many praised the event on blogs, forums and social networks. The video was wildly successful on YouTube, attracting over 562,000 views. On the website BlogBang, the video was seen more than 243,459 times. Considering social networks as a measure, it can be observed that more than 6,200,000 persons "like" the Heineken brand and that more than 99,983 people are talking about it. If one searches for "Heineken: Guerilla Marketing Event in Italy" on Google, the browser returns more than 52,500 results; a search for "Heineken Italy Activation Milan AC Real Madrid" returns more than 35,200 results.

II/ Today: Unconventional marketing conquers the street

Unconventional marketing has benefited greatly from the Internet, which has facilitated and multiplied the viral aspect of such campaigns. However, this online dimension is becoming

increasingly integrated with an offline dimension that is being cultivated by marketers in unprecedented ways. In the current period, unconventional marketing is now focused on a space that has been the site of many consumers' most effective experiences: the street. The street, its culture, its art, its tribes – all these components provide the conditions or marketing from the street in ways that demolish the conventional media/point-of-sale dyad which has traditionally structured marketing communication.

Street art

Today, streets are not just places to move from one point to another; they are places of meeting, and provide a very interesting platform for promotion. The street is becoming a space for affirming one's culture or tribal belonging. From happenings to street shows, people are using the street to affirm who they are and what they believe in. Some professionals of marketing and communication understand this and have focused their promotional campaigns using the street as a source of material. They have extensively studied these evolutions of the concept of the street and worked to adapt their strategies to it. They also understood that consumers have become bored with classical marketing campaigns. That such strategies have lost their impact is understandable, given the large number of ads that a person may encounter in an average day.

It is important to understand that using the street as a platform not only pertains to passing out flyers to pedestrians. To use the substance of the street as a platform for promotion and communication means to create a link with people and to show them something new, something exciting, something they are not used to. The purest example of the street as a substance is street art, whereby artists use the street as a platform for expression. Through this art they use their creativity to publicly convey their vision of society. In achieving this, they have the full spectrum of emotions at their disposal. Their paintings, mosaics, billboards, or other forms of expression may employ humor, frustration, anger, etc. By way of these works of art, these contemporary artists reveal the spirit of street culture, in which street art has become a way to develop an alternative public discourse (Borghini, Visconti, Anderson and Sherry, 2010). Another example of the evolution of street expression is the flash mob. A flash mob is an ephemeral meeting of persons who generally do not know each other, with the aim of carrying out a predefined, coordinated action. These actions take place in the street or other public places and give participants an opportunity to affirm their desire to belong to a group. Through such an event, they are able to express the power of "us." The street thus becomes a venue for communal expression (Lallement, 2010). These events are rarely political but do signify a wish to protest against the depersonalization of public space. The lived experiences during flash mobs constitute a prototype of the postmodern consumption experience: uniform, humorous, collective and, most importantly, co-created by consumers who transcend the role of observers to become actors in public discourse. To sum up, the emergence of the street as material and platform is more than a mere trend; it a true ethos that is inspired by street culture and which permits consumers to affirm their belonging to a group and/or to express their ideas, wishes or feelings. One can see that unconventional marketing is adopting various elements of street culture (Brace-Govan and De Burgh-Woodman, 2008; Visconti, Sherry, Borghini and Anderson, 2010) and inviting reconsideration of the image of the street itself (Cathus, 1998).

Urban tribal culture

As mentioned above, the street has become a place of meeting and expression. More than that, it has become the principal venue of expression for consumers who wish to affirm their

belonging to a tribe (Maffesoli, 1996; Cova, 1997). Indeed, a majority of consumers make use of the street in order to show publicly that they are part of a group with common ideas, passions or wishes. Companies and marketing and communication professionals have come to acknowledge that this "tribal era" could present a real opportunity to create a direct link with the consumer. In fact, *tribal marketing* is today one of the most successful strategies in the marketing field. Strategies promoting cosmetics for dark-skinned people or products targeting "nerds" or "geeks" respond to a desire among a majority of consumers to affirm their belonging to a tribe. Numerous tribal movements have emerged during the last ten years, a development to which marketing actors have been obliged to adapt their strategies.

Marketers have found that a great way to show their interest in consumers is to get in their way, on the street. Through unconventional marketing, they have sought to develop micro-universes directly linked with the habits and wishes of their customers. One example of this is the "Lomowall operation" in several major European cities (see Figure 11.3). This example illustrates how consumers can be encouraged to affirm their identity, and the success of the project has significant ramifications for companies seeking to connect with customers by engaging them in self-expression. By way of such operations, marketing and communication actors and their target consumers co-create a universe, forging strong links between them in the process. Brands, and companies more generally, can thus convey a sense to consumers that, more than being mere targets, they can be real actors and ambassadors of the brands they love. This last point may partially explain the success of "brand communities" and is one the most important aims of unconventional marketing operations.

Marketing reclaims the street

Using the street as a platform for organizing events that permit consumers to meet each other, brands and companies who use unconventional marketing campaigns have sought to transform a simple relationship (offer/demand) into an intimate connection (brand/consumers). Moreover, these organizations have the opportunity to affirm their differentiation from direct competitors. To achieve this goal, they are using creativity and responding to consumer desires in unprecedented ways. Unconventional marketing actors want to seduce customers by creating campaigns that consumers are not used to seeing. The principal objective of these campaigns is to surprise and delight consumers, compelling them to remember a brand that wants them to have a good time. Through the use of street marketing operations, brands are able to express their differences and broadcast their values. And by virtue of this special link, consumers are more open to play the game and listen to the brand's messages. The majority of consumers perceive such marketing efforts as a treat and an opportunity for a good experience. Most of them enjoy the moment and are open to share some of their time and, if the campaign is a success, some of their money.

For a majority of people, street marketing is limited to the distribution of flyers. Thus it is important to specify that street marketing is a general term encompassing six principal kinds of activities:

- *Distribution of flyers or products.* This activity is more traditional and the most common form of street marketing employed by brands. Some companies seek to make these operations more sophisticated by distributing flypacks, which are a combination of a product and an envelope. These flypacks yield greater returns but also require greater expenditure than flyers.
- *Product animations.* This form of operation consists of personalizing a high-traffic space using brand imagery. The idea is to create a micro-universe in order to promote a new product

Exhibit 1: The Lomowall

The Lomography community members are used to print their pictures in an uncommon format: 10 x 7 cm. Even if this small format is disconcerting at first, when one takes Lomographic pictures, they are thought of as pictures that can be collected and stuck in albums! People take them, pass them along to their neighbors, swap them, etc. And to give value to these pictures, Lomography aficionados organize exhibitions using a form of mosaic called "Lomowalls" or "walls of Lomo." Pictures are printed several times and are juxtaposed with the goal of creating a mosaic of pictures. Some Lomowalls are small and set up inside Lomography stores; others are bigger and are organized outside with the help of Lomography enthusiasts (see Fig 11.3).

Figure 11.3 Lomowall in London, 2007 Lomography World Congress in London. Source: Lomography, www.lomography.com, reproduced with permission

- or service. For example, when Microsoft launched its Windows 7 operating system in 2009, the brand opened an ephemeral Windows café in Paris.
- *Human animations*. The goal of such actions is to create a space in which the brand's message is communicated through human activity. The best example of this form of operation is a creation by Ikea, which installed open flats in the streets of Stockholm with people living inside them.
- *Road shows*. This form of mobile presentation is based on the development of means of transport: Taxibike, Segway, etc. In 2001, Garnier promoted its brand by decorating a bus with Fructis Stylebrand imagery. In Toronto in 2005, Vespa enlisted people to ride Vespa scooters in front of universities in the city.
- *Uncovered actions*. These activities involve the customization of street elements. One of the most famous examples was carried out by Nike through the communication agency Ubi Bene, which put a Tony Parker basketball shirt on the French replica of the Statue of Liberty in 2005.

- *Event actions*. These activities take the form of spectacles, such as flash mobs or contests. The idea is to promote a product, service or brand value through organization of a public event. Among the most famous event actions are Red Bull Contests, which are organized every year. Their 2008 bike-riding championship, which took place in the street, is exemplary of these contests (http://www.zapiks.fr/red-bull-contest-2008.html).

Customization of street elements allows the brand to express its values, to promote its products or services, and to thrust consumers into the heart of its communication strategy. Communication thus becomes experiential for consumers who take part in the moment, sharing a private link with the brand and with other consumers. Using spectacular or ephemeral activities (Sherry, Kozinets and Borghini, 2007), brands produce memorable moments for consumers, who may go on to make a conscious or unconscious link between the moment and the brand that has curated that positive experience for them. These spectacles are perhaps the ultimate form of consumer experience, and they are changing, becoming more open to consumer co-creation. In these cases, consumers collude with producers in formulating their consumption experiences, resulting in more powerful and personally significant encounters. They play along with marketers' rules, but only to a certain extent (ibid.).

Today, street marketing is a compelling way to promote a product or service using a familiar space, the street, thereby allowing the brand to form a personal connection with consumers. Through these kinds of campaigns, consumers are becoming actors in brands' communication strategies, exercising power and creativity in the process (Berthon, Pitt, McCarthy and Kates, 2007). Street marketing is thus a form of marketing which permits companies to use the street as a marketing workshop, and is an effective way to introduce consumers to a brand's communication while transforming them into brand actors.

III/ Future: Unconventional marketing as consumer made

There are increasing signs of breaking down of the central convention of the discipline, the one of the separation of the production and consumption spheres. Thus, a visionary perspective of unconventional marketing goes beyond alternative ways of communicating (part 1) and street marketing approaches (part 2); it considers that the future of unconventional marketing will emerge from the destruction of this central convention. It is in that sense that seeing the unconventional marketing as consumer-made paves the way for the future.

According to Ritzer, Dean and Jurgenson (2012, p. 380), "there were good reasons to contend that factory workers in the heyday of the Industrial Revolution could be thought of as producers, and shoppers in the United States in the 1970s as consumers, but such thinking is embedded in, and limited to, specific historical circumstances." Announcing the rise of the "prosumers" area, Ritzer, Dean and Jurgenson (2012) cast doubt on a central assumption of marketing, one that is a consequence of the economy: on one hand, there is the sphere of producers, and on the other, there is the sphere of consumers. This convention is becoming less and less pertinent. We are observing the development of collaborative approaches mixing producers and consumers in the design and the realization of communication campaigns and other brand events, and it is through this mixing that these approaches are unconventional. It is no longer a question of doing marketing *about* consumers ("market to"), but rather *with* consumers ("market with"), as prescribed by the Service-Dominant Logic of marketing (Vargo and Lusch, 2004).

Collaborative consumers

Consumer–producers, or "prosumers" (Ritzer and Jurgenson, 2010), are becoming an increasingly important phenomenon in contemporary consumption and society (Kornberger, 2010). With the emergence of Web 2.0, consumers have become significantly empowered in their relationships with companies (Uncles, 2008). This has led them to produce their own interpretations of meaning and strategy associated with the brands that they prefer (Wipperfürth, 2005). It is generally understood that, thanks to the Internet, consumers have become more powerful and creative as subjects and that this new way of being has a knock-on effect on their consumption and on the way they use the market, with the act of consumption itself becoming an area where they can exercise power and creativity (Berthon et al., 2007). Hence, these consumers produce meanings that are not always exactly what brand strategists had in mind (O'Guinn and Muniz, 2005). Moreover, these consumer–producers can go on to generate their own brands which can then be disseminated widely using Web 2.0 technologies (Kozinets, Hemetsberger and Schau, 2008). There is a growing number of examples of this such as Linux and Firefox, but also Bookcrossing, Couchsurfing, Geocaching, etc.

Several research streams contemplate the active role that consumers could play in the market, although they often deal with very different aspects of actual consumption practices and are rooted in different theoretical backgrounds (Cova and Dalli, 2009). Most relevant here is the literature that has developed in the field of innovation management (von Hippel, 1986, 2005) examining the role of end users in the new product development process. Initially, the focus was on the role of lead users. These users are small groups of subjects whose collaboration has been purposefully sought and exploited by companies from various sectors because such users are more active and creative, and act as opinion leaders in their respective communities (Franke, Von Hippel and Schreier, 2006). Later, a more general approach was developed in which scholars broadened the scope of their analysis to include communities of end users and consumers who collaborate with (often large) companies in developing new products (Fuller, Jawecki and Muhlbacher, 2007; Marchi, Giachetti and De Gennaro, 2011; Prandelli, Verona and Raccagni, 2006; Sawhney, Verona and Prandelli, 2005). Examples can be found in the field of consumer products (sport-related communities such as NikeTalk) and professional equipments (forums for electronic music producers such as the Propellerhead company website). According to this perspective, consumers can act as both developers and marketers, contributing to the success of new products in terms of functional characteristics and market access due to their role as opinion leaders and trendsetters.

Collaborative programs

In the rapidly expanding field of brand communities, alongside the US brand Harley Davidson – which has hypnotized marketers everywhere – in Europe there is the famous example of Ducati (Sawnhey, Verona and Prandelli, 2005; Marchi, Giachetti and De Gennaro, 2011). The management model that Ducati created has led to great success, and today Ducati is not only the darling of the European motorcycle industry but also a cult brand with a growing number of followers, called "Ducatists." In this model, staff members and consumers have the same status with regard to the brand community, that is, they are indistinguishable insofar as they belong to the same community. On one hand, staff members consume brand products; on the other, consumers can be transformed into producers of events, ideas and even brand accessories. Thus, Ducati and the Ducatists represent a classic example of how brand communities provide a favorable context for the emergence of consumer-producers who can

become true partners of the company. This erasure of boundaries between consumers and producers is clearly very much in fashion, as witnessed notably by the consumer-generated content approaches (Muniz and Schau, 2011) that Web 2.0 has popularized, and above all by the co-creation concept introduced by the new Service-Dominant Logic marketing theory (Vargo and Lusch, 2004). The company's co-creation of value (Prahalad and Ramaswamy, 2004) together with the consumer is the key process in this new marketing logic, which has become increasingly popular over the years. With brand communities, the concept of "market with" has been pushed to the limit insofar as brands are being transformed into virtual platforms (Arvidsson, 2006) used to stage the aggregation of staff members and consumers united by the same passion.

This has given rise to collaborative approaches in which marketing is evolving into true participatory conversations (Berthon, Pitt and Campbell, 2008; Muniz and Schau, 2011) around the brand. "Branding is now recognized for its ability to create dialogue inside organizations (for example, between functions) as well as between members of the organization and its customers, consumers, fans and critics" (Hatch and Schultz, 2010, p. 595). The boutique consultancy Trendwatching coined the term "Customer Made" to define this phenomenon of "corporations creating goods, services and experiences in close cooperation with experienced and creative consumers, tapping into their intellectual capital, and in exchange giving them a direct say in (and rewarding them for) what actually gets produced, manufactured, developed, designed, serviced, or processed" (http://trendwatching.com/trends/CUSTOMER-MADE.htm). Examples include Dell with its initiative *Idea Storm: Where Your Ideas Reign*, Starbucks with *My Starbucks Ideas*, and LEGO with *Lego Factory.*

Case study: Alfisti.com

There are a few cases allowing us to envision the future of unconventional marketing as consumer made. Amongst them, there is the recent Alfisti project led by Alfa Romeo. Alfa Romeo is considered to be one of the few truly cult brands of the automotive industry. Its clients see themselves as Alfa enthusiasts (*Alfisti* in Italian) – that is, fans, or even fanatics of Alfa and its cars. They meet in Alfa enthusiasts' clubs to share their passion, in the image of many current consumer communities. An inventory carried out by the company in early 2008 highlighted the presence of various types of Alfa owners' clubs. Of these clubs, 20% had more than 2,000 members while 30% had between 500 and 2,000 and 50% had fewer than 500. The biggest clubs were Club Alfa Italia (22,000 members and 15,000 cars), AROC UK (3,850 members and 8,000 cars), Stichting Club Alfa Holland (4,000 members and 15,000 cars), AROC USA (3,600 members and 10,000 cars), AROC Australia (4,000 members and 2,500 cars), and AR Club Sweden (2,000 members and 4,000 cars). Among the Alfa owners' clubs identified, 95% organize gatherings of new and historic Alfas, with 62% organizing more than five events per year. Their members correspond to the image of active consumers: market partners of the company that work together to organize events in honor of the Alfa Romeo brand. In early 2009, the ambition of Alfa Romeo's and Fiat Group's management was to reintegrate community creation into the production process of the company. The ultimate aims were:

- To develop a new marketing approach that would be cheaper for the company, based on word-of-mouth;
- To increase customer loyalty;
- To transform fans of the brand into marketing capital.

Alfa Romeo focused on the best way to get Alfisti together in one virtual space and collaborate. It offered an online laboratory (Alfisti.com), where a limited group of Alfa enthusiasts could cooperate with the company for one year in order to co-create the event of the centenary of the brand, falling on June 24, 2010. At a day-long seminar on June 24, 2009, one year before the centenary celebrations, the Alfa Romeo management team announced the launch of its online platform. For reasons of efficiency, access to the site was deliberately restricted to the first 6,000 Alfa enthusiasts who responded to the 100,000 invitations sent out by the Alfa Romeo project team. In addition to these 6,000 Alfisti, 700 members from Alfa Romeo owners' clubs worldwide were personally invited to join the website. Discussion forums and moderation were set up in five languages. The site included a blog which the company used to ask specific questions and receive answers on specified themes, as well as a more unrestricted discussion forum.

Alfa Romeo celebrated its hundredth anniversary on June 24, 2010. For this occasion Milan became the stage for a gigantic event. Every area in the city – its squares, its parks, its entertainment venues, and even the outskirts – paid tribute to the brand. The celebrations reached their climax on June 26, at the Fiera di Milano, where over 5,000 Alfisti (of which 80% came from abroad) had agreed to meet, accompanied by 3,000 Alfa Romeos. The participants had the opportunity to meet and share their passion, exhibit their beloved cars, and visit the historical exhibition "Fiera Milano e Alfa Romeo: frammenti d'insieme" before meeting in the city center. On Sunday, June 27, the celebrations ended with a procession of 3,000 Alfa Romeos that met in Milan's outskirts, each carrying a flag, creating an unforgettable experience (See Figure 11.4 below).

Figure 11.4 Alfa Romeo's hundredth anniversary celebration, Milan, June 2010. Source www.autonews.fr with permission

Between June 2009 and June 2010, Alfa Romeo learned the reality of collaboration between a company and consumer enthusiasts. The process of engaging passionate customers was much less linear and more complex than originally expected by the company. From managing criticism, to taming "uncontrollable voices" through assertion of its authority, to the difficulties of managing thematic dialogues, the company found itself coping with the hopelessness of developing its plans and fulfilling its obligations to invent new business practices together with the customers. In this

way, enlisting passionate customers led to an evolution of the internal operations of the company in terms of how it could integrate innovative proposals and develop shared knowledge. The creative process, despite the difficulties along the way, was one that brought about closer affinity between Alfa employees, Alfa customers, and the meaning of the brand itself. Design and preparations for the centenary celebrations brought out the creativity of Alfa enthusiasts, both within the company and in the greater brand community. Examples included the idea of a parade around Milan and of coloring the city's ring-road red (red being the Alfa Romeo color) on the day of the centenary celebrations, or the proposal to enable all Alfa fans who did not own an Alfa to take part in the event by renting a car at railway stations or airports.

IV/ Theoretical implications

Our conceptual framing of unconventional marketing in three main periods (the past period characterized by "below the line" communication alternatives; the current period characterized by the mobilization of the street; the forthcoming period marked by the development of consumer made actions) parallels the three major steps of the development of consumer competences during the last thirty years. The study of the evolution of marketing discourses (Cova and Cova, 2012) shows a rise in consumer competence, ranging from a superficial level of dialogue to a deeper level of integration and including an intermediary level of playfulness and performance. The first level of dialogue is backed by relationship marketing approaches. The second level of playfulness/performances is supported by experiential marketing approaches. The third level of resource integration and co-creation is welcomed by collaborative marketing approaches. Unconventional marketing understood as guerrilla marketing fits with the level of dialogue through provocative promotions. Unconventional marketing understood as street marketing corresponds to the level of playfulness and performances in the streets. Unconventional marketing understood as consumer made matches the third level of resource integration and co-creation with companies. This parallel helps in validating the strength of our conceptualization into three periods (see Table 11.1). This parallel provides us with the possibility to generate a specific research agenda paving the way for the future of unconventional marketing.

First of all, the notion of consumer competence has to be redefined in the light of the progressive breaking down of the separation between production and consumption spheres. Consumer competence has been mainly defined in terms of the consumer capacity to acquire and comprehend marketplace information. A competent consumer is assumed "to be informed about products and to be familiar with how markets function" (Berg, 2007, p. 418). The constructs of consumer sophistication, consumer expertise and consumer savvy define consumer competence in terms of the skills deployed to best satisfy consumers' needs in a specific shopping situation. For example, a savvy consumer is an informed and active agent who possesses technological sophistication, interpersonal network competency, online network competency and marketing/advertising literacy to consume (Macdonald and Uncles, 2007). This consumer competence represents an ability to acquire, thus, a capacity to have. Consumer research literature sees competences mainly as series of skills and knowledge surrounding the practice of shopping (Berg, 2007) and dealing with the heterogeneous sets of information available in the marketplace

Table 11.1 Unconventional marketing approaches and competences of the consumer

Unconventional marketing approaches	*Competencies of the consumer*
Guerrilla marketing	Dialogue
Street marketing	Dialogue + Role play
Consumer made	Dialogue + Role play + Resource integration

Source: Authors

(Gronhoj, 2007). In the marketing literature, the concept of competency has been mainly analysed in relation to the shopping decision making process, and hence little has been said about consumers' competences in relation to consumer made activities. In the case study, the Alfisti put into play competencies which have nothing to do with shopping and purchasing; they are branding and marketing competences and must be analysed as such.

Second, the notion of "working consumers" (Cova and Dalli, 2009) has to be further developed. In the case study, the Alfisti do represent a sort of worker. If we rely on the three dimensions defined by the sociology of work (Dujarier, 2008), we can confirm that in the case of Alfa Romeo with the Alfisti, work is actually carried out as we find: (1) useful coordinated activity; (2) a social relationship to production with prescribed consumer tasks managed by the company through the formatted framework of the Alfisti.com blog; (3) an expected productive contribution in the form of the organization of the centenary and the design of the future community platform. If unconventional marketing as consumer made will transform consumers or prosumers (Ritzer, Dean and Jurgenson, 2012) into workers – even voluntary workers – this will have a major impact on the way we conceptualize and analyse the interactions and the relations between the consumer and the company. In organization theory work is defined as an activity carried out by one party, the worker, which produces something of value for the party that organizes the work and defines its objectives, the firm. This entails that the innovative potential of the consumers will be subsumed under the regime of economic rationalization, legal authority and bureaucratic organization (Denegri-Knott and Zwick, 2012). While requiring consumer competences for their ongoing economic value creation, companies tend to apply wherever possible traditional regimes of rationalization to consumer made activities. Denegri-Knott and Zwick (2012) argue that success in the age of prosumption would require that companies become a genuinely supportive and authentic resource for consumer made activities while refraining strictly and absolutely from any familiar urge to control and streamline it. Research has to investigate the emergence of a new breed of companies that are able to successfully put consumers to work (Zwick, Bonsu and Darmody, 2008).

Third, unconventional marketing as consumer made will challenge the way marketers live their function. The other side of the coin when consumers possess and exercise certain competences – and thus are prosumers – is less power and competency for people working in the company that serves them, namely brand managers and other marketing specialists. Above all, their ideas interfere with those of the marketers to such an extent as to put the latter under threat within the organization. The question then becomes how to define a brand if all of its fans are free to say whatever they want about it. Marketing staff might start wondering about what their brand strategy really involves if the whole of their brand community is allowed to participate in the design of the marketing process. This concern is understandable since ultimately these are the people that company management will be holding accountable, not the consumers. The act of collaborating with consumers does not in any way detract from the reality that brands are first

and foremost operated by a professional class trained in managing, controlling, measuring and protecting them. Moreover, specialists who start to lose control are generally quite aware of the risk they run of being subjected to a logic of management control. In reality, they are hostages of a paradox which forces them to relinquish power and control even as they are increasingly squeezed by a value-for-money constraint that results from financial pressure. Moreover, they don't really have much hope of getting any relief from this constant financial pressure – quite the contrary. The future of unconventional marketing is thus not just a bright utopia and research needs to investigate the process of mental change from old marketing practices to new unconventional ones. For that it has to follow marketers at work (Zwick and Cayla, 2011) in companies that have started to collaborate with consumers.

Unconventional marketing understood as consumer made represents a major paradigmatic shift for the future of our discipline. We agree that "a few of the theories span current and future possibilities. For example, some aspects of the service dominant logic (co-creation and co-production) … be partially realized at present but are likely to achieve their full potential under the emergent paradigm" (Achrol and Kotler, 2012, p. 40), and that, building on the SDL/co-creation logic, unconventional as consumer made is part of the emergent paradigm of marketing.

Conclusion

This chapter has sought to dig into the fuzzy notion of unconventional marketing by integrating the many past related epithets into a coherent whole (part 1). Then, it has organized the field in terms of eras, proposing street marketing as the current shape of unconventional marketing (part 2) and consumer made as the future shape of unconventional marketing (part 3). On this basis, it has introduced a specific research agenda around the notion of consumers' work paving the way for future research.

Unconventional marketing is a term that describes transformational approaches that seek to turn entrenched assumptions of marketing on their head. The first wave of unconventional marketing, associated with *guerrilla marketing*, confronted the convention wherein the impact of a communication campaign should be directly proportional to the budget invested. The second wave, associated with *street marketing*, broke with the conventional wisdom that the field of marketing was confined to a home/point-of-sale dichotomy. The emergent third wave, concerning offers being *consumer made*, confronts a prevalent marketing convention borne of the economy itself: the separation between the production and consumption spheres. This chapter shows how each of these waves of unconventional marketing had a revolutionary impact. On this basis, the chapter introduces a specific research agenda paving the way for the future. This agenda emphasizes the need to develop research on consumer competence, working consumer and marketing practice changes.

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12

Social media

Past, present, and future

Lindsay Korenich, Dana Lascu, Lalita Manrai, and Ajay Manrai

Abstract

This chapter reviews past social media developments, examines current social media practices, and offers future projections regarding the role of social media in marketing theory and practice. In the process, it provides a comprehensive understanding of social media in all its facets. It also offers conceptual frameworks of past and present social media developments and practices, which include, among others, various applications, such as virtual game worlds; content communities, such as YouTube and other photo and video sharing communities; user generated content such as blogs and micro-blogs; digital video; social networking communities, such as Facebook; virtual worlds, such as Second Life, and virtual goods; ratings and reviews and other word-of-mouth communities; collaborative projects, such as Wikipedia; and mobile social media, among others. Subsequently, it is projected that the future social media technology will increasingly result from virtually endless interactions of company/company generated content and user/user generated content. Competition and information clutter is also projected to increase substantially in the future. Therefore the companies will have to tap into the lucrative social media platforms in order to effectively market to target consumers.

The chapter will also address overall opportunities and challenges of social media including the inevitable life cycle scenarios where online social media as we know it will lose its potency and experience the fatigue and ineffective resonance we now observe in the case of telemarketing and other older media vehicles. In these scenarios, social media may lose its power and even its significance – already, consumers are defecting from social media communities where they perceive an overwhelming brand and/or company presence, or even at the mere possibility that domain owners might attempt to monetize their website. These scenarios make it very evident that true innovations rather than mere tweaking of technologies is necessary for success and survival of social media in the future.

Key words

Social media, user generated content, social networks, content communities, blogging, mobile social media, and social media analytics.

Introduction

To many who do not use various social media sites on a daily basis, the term "social media" may be considered fairly new. In reality, its roots date back more than thirty years to technologies that would seem arcane to the vast majority of current social media users. While it took social media decades to gain traction as a viable communication and business tool, the pace at which the technology has developed and advanced in recent years is difficult to fathom. Any discussion of current trends and the latest technologies could be outdated within weeks or months. While academic research on social media is reasonably well developed and established (see Kaplan and Haenlein 2009, 2011; Hanna, Rohm and Crittenden 2011; Constantinides and Stagno 2011; and Akar and Topçu 2011), no study to date has attempted to create a conceptual framework that illustrates the development of social media over the years, capturing its various life cycle stages.

Although the term social media has taken on numerous meanings and is somewhat open to interpretation as the domain is constantly reinventing itself, generally the term refers to "websites and applications used for social networking" (Oxford Dictionaries 2012). Given that definition, one would wonder what the term "social networking" really means. Social media encompasses social networks, as well as content oriented networks (Euromonitor International 2010).

As evidenced in so many facets of our daily communication habits, social media has established itself as one of the more preeminent communication vehicles. Studies show that 75% of internet users are accessing a social network or blog when they go online (Johnston 2010). In the United States alone, there are currently 157.8 million social network users, 141.2 million Facebook users, and businesses spend $3.6 billion on advertising, with Facebook alone accounting for $2.6 billion; it is projected that these numbers will greatly increase, and in 2014, there will be 170.7 million social network users, 152.0 million Facebook users, and businesses will spend $5.6 billion on advertising, with Facebook alone accounting for $3.8 billion (e-Marketer 2012).

To underscore the role social media currently plays in our lives, consider the following statistics noted in a Nielsen Social Media Report (2011):

- Social networks and blogs continue to dominate time online, now accounting for nearly a quarter of total time spent on the internet;
- Nearly 4 in 5 active internet users visit social networks and blogs;
- Close to 40% of social media users access social media content from their mobile phone;
- Social networking apps are the third most-used among U.S. Smartphone owners (behind games and weather, but ahead of maps, music, news, and entertainment).

This paper will discuss (a) the foundational platforms that fueled the beginning of social media ("Social Media 1.0"); (b) a current overview of social media trends ("Social Media 2.0"; and (c) an analysis of current literature to help project the forces determining the future of social media ("Social Media 2.0+"). While the term "Web 2.0" is fairly well-known, and, some would argue, encompasses social media technologies, this study proposes that social media technologies have developed at a similar pace as the "web," the specific nature of social media concepts are separate from the overall "web," and thus warrant the use of independent terminology to categorize them. For this reason, historical social media technologies will be referred to as "Social Media 1.0" (occurred concurrently with Web 1.0); current social media constructs will be known as "Social Media 2.0" (happening concurrently with Web 2.0) and the future framework of social media will be dubbed "Social Media 2.0+."

A historical perspective on social media: Social Media 1.0

While most benefit is gained from investigating current and future trends of social media, it is important to have an understanding of how social media has developed over the years. Although it started as a rudimentary communication device, it has morphed into a complex and crucial business and social tool representing a multi-billion dollar industry (Sandholm 2011). Several past social media technologies are reviewed below in order to provide an understanding of the foundation for social media and to capture the nature of historical developments in a conceptual framework.

Phone phreaking

Perhaps the oldest form of social media was known as "phone phreaking," which entailed randomly exploring and testing the boundaries of the phone system. It began in the 1950s, with exploratory technology users trying to identify ways to "cheat" the phone system to avoid costly long distance phone conversations (Borders 2009). Phreaks used company test lines and conference circuits in order to host virtual seminars and discussions. The first "blogs" or "podcasts" were conducted over corporate voice mail systems where phone phreaks hacked into unused mailboxes. One would call into those phone mailboxes using a 1–800 number and listen to important phreaking content and leave comments and information as a voice mail; the phreak would then respond with additional phreaking content in the next update (Borders 2009).

Usernets

Usernet systems were first launched in the late 1970s, allowing users to post articles or news items to a common group. They are considered to be a precursor to newsreader clients (Chapman 2009). Many of the basic technologies evident in current groups (such as Yahoo and Google Groups) are based on usernet systems (Chapman 2009).

Bulletin board systems

Traditionally, bulletin board systems (BBSs) were associated with illegal activity, including playing host to hacking instructions and virus code (Chapman 2009). Bulletin board systems were among the first platforms that allowed users to interact with one another via a personal computer and a telephone modem. Users could log on and access message boards and community file sharing (Borders 2009).

Commercial online services

Examples of these include Genie, CompuServe, and Prodigy, which were the corporate world's attempt to enter the social media space. It was with these services that the first chat capabilities were launched. These types of sites gained moderate popularity in the late 1980s, and continued through the late 1990s. America Online (AOL) entered the market and achieved a critical mass with its online chatting software (Borders 2009). As commercial online services were gaining popularity, the most critical communication tool was released to the masses when the World Wide Web became available on August 6, 1991 (Borders 2009).

Instant messaging

Instant messaging social media services included IRC, or Internet relay chat, launched in 1988, ICQ, launched in 1996, and other IM services such as AOL Instant Messenger. IRC was similar to the modern day Twitter as it permitted users to post updates to their global network (Borders 2009). Emotions and word abbreviations began to emerge as IM services were gaining popularity.

Social media sharing

Napster was one of the first sites to allow users to exchange media files (albeit illegally) with others, but it was short-lived and only survived from 1999 to 2000 before all copyrighted content had to be removed. Limewire and BitTorrent were quick to follow as alternative social media sharing platforms (Borders 2009). The pirating of copyrighted content online has been an issue ever since, with legal issues emerging around copyrighted music, photos, videos, and text; today, however, laws are in place governing many aspects of online activity, including regulations around third party content, content ownership/control, criminal activity, and employment practices (Ossian 2009).

The Social Media 1.0 conceptual framework

Very early on, social media was an underground, too often illegal and/or ungoverned, way for technologically savvy individuals to circumvent, interrupt, or copy codes, programs and services used by businesses and individuals. It was not widely embraced by businesses and not much value was placed on the usefulness of the technologies. The introduction of the World Wide Web enabled the proliferation of social media to a much broader audience, setting the groundwork for Social Media 2.0. The key similarity among these initial social media platforms was that they enhanced the ways we communicated with one another, or at least added additional venues for friends – and on a wide scale for the first time, strangers – to communicate and share information. Each one also presented an entirely new concept, from sharing codes to computer viruses, to sharing music online. For the most part, each of these platforms entered uncharted territory in the online world and they did so operating independently of one another. The user had to have the proper technology to even access these sites, but more importantly, they had to then search out each technology individually.

Figure 12.1 illustrates this relationship, with the user as the wheel, and the various social media technologies as spokes. The individual had to "pull" content from these sites by reaching out to them, as little to no content was pushed by the companies to the users. It also illustrates how social media had been operating as individual silos.

Current perspective on social media: Social Media 2.0

Clearly, social media has yet to reach its full potential when it comes to marketing strategy. A McKinsey (2011) study of 792 marketing executives from a broad range of industries, regions, and company sizes found that digital media and online tools are barely tapped by companies, and, while most believe that an online presence is a must, few are taking active steps in engaging consumers using social media. Marketing practitioners are still attempting to find out how digital media can be used to improve their return on investment, how they should use the data to produce meaningful customer insights in order to drive sales and increase customer engagement. They have only basic consumer information, despite the large quantity of social

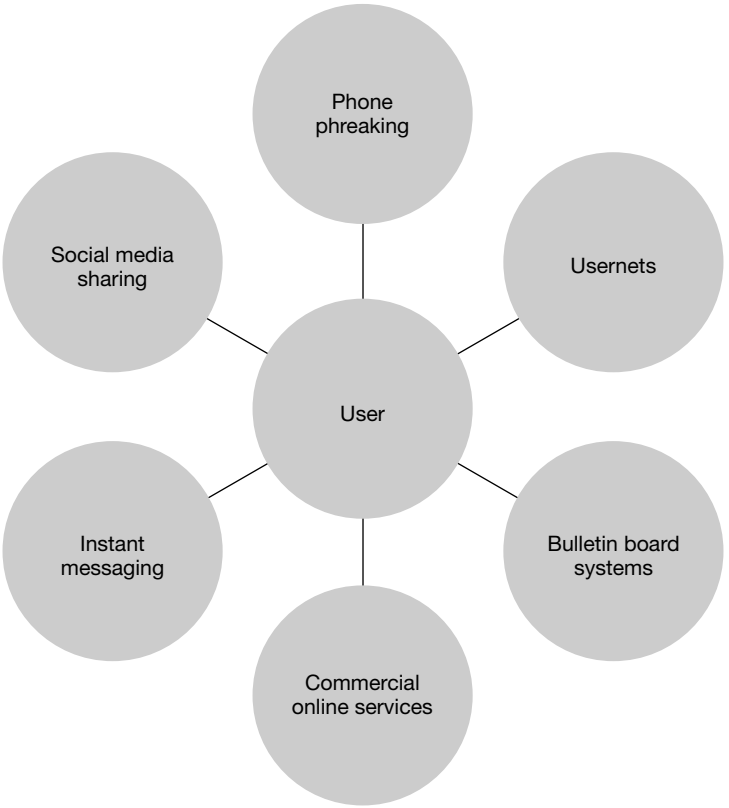

Figure 12.1 Historical perspective on social media: conceptual framework

media data, and they have difficulties in measuring the impact of social media. They attribute these limits to the lack of internal leadership with regard to social media and the lack of resources to develop better analytical capabilities that could potentially harvest social media data for more effective communications to target consumers. Yet, while companies are currently using primarily two digital channels, company pages and e-mail, marketing executives foresee that, in the next two to four years, they should be using a broader range of tools, especially mobile and social media platforms, and it is clear that, at present, they are experimenting – most state that their companies currently use social media to achieve certain business objectives (McKinsey 2011).

The social media venues and tools currently available to marketing practitioners could potentially not only enhance, but also inherently change the way and the speed at which we communicate with one another as individuals, businesses and organizations. Almost all current social media users access various sites to interact with friends. Many also interact with companies and brands to learn more about the companies' products or services, or to capitalize on discounts (Euromonitor 2012).

It is important to address the social media services that are currently in vogue in order to create a framework for understanding just how greatly they impact our personal and professional lives. According to a 2009 Social Media Guide, "[online] identity is now constructed rather than ascribed." The industry has changed so dramatically since "Social Media 1.0"; there are now social media applications to manage or impact virtually every aspect of one's life, even parts of one's life that never existed until these technologies were invented.

Social networks

A number of niche social media technologies fall into this category, including dating sites, forums, and more "traditional" social networks such as Facebook, Six Degrees, Friendster, MySpace, AsianAvenue, MiGente, BlackPlanet and Live Journal. These sites were in their infancy at the end of Social Media 1.0, but have come into their own in recent years, as they continue to innovate to become more interactive. Many of these sites quickly gained popularity with the masses. The dramatic increase in social networks indicates that users are demanding this kind of connection with others. But their long-term viability depends on their ability to keep users interested and respond to the needs of the consumer. Secondarily, there is exceeding pressure to turn a profit and help investors or shareholders realize a return on their investment (Euromonitor International 2010).

Real time updates

Whereas earlier social media technologies relied more on static content, the new trend is focused on real-time updates. Users no longer wait for a news outlet to learn about, report on, and broadcast breaking stories; they turn to Twitter and other technologies where information travels and becomes available much faster. Location based technologies have also increased in popularity, allowing users to check-in at various locations. BrightKite and FourSquare, along with Facebook, have tapped in to the popularity of this concept (Borders 2009).

Virtual worlds

In virtual worlds, users exist in an online community as avatars, which can then interact with other users and within the parameters of the virtual world (Wikipedia 2012). The term "virtual world" was relatively unknown several years ago, but a Google search of virtual worlds today points you not only to sites like Secondlife, SqwishLand, Whyville, Twinity, and World of Warcraft, but also websites dedicated to reviewing virtual worlds, affinity groups for those interested in virtual worlds, and university programs teaching students how to build virtual worlds for use in a business setting. This has quickly blossomed into a major industry, with more than $1 billion invested in virtual worlds by venture capitalists from August 2007–August 2008 (Renaud and Kane 2008).

Internet calling

Skype is the most widely recognized technology in this space. As online technologies and mobile phones have advanced, the use of landline phone calls has diminished. Nearly a quarter of U.S. households have eliminated landlines (Reisinger 2010). Skype allows users to place audio or video phone calls using an electronic device (cellular phone, computer or tablet) and an Internet connection. Many of the calls can take place free of charge, allowing for inexpensive phone or face-to-face communication between people who formerly had to rely on more expensive solutions or communication by email.

Blogs/Microblogs

Blogs themselves are not new – bulletin board systems of the 1970s used the same concepts – but whereas BBS users had to have a fairly in-depth understanding of software programs, anyone with an Internet connection and a topic at hand can author a blog. Microblogging (Twitter, Posterous and Tumblr are examples of this) has also increased in popularity. The draw of these technologies

is that they allow for greater interactivity between the users. Instead of just reading static content, users can comment on posts, interact with other users, and perhaps engage in a dialogue.

Content communities/Media sharing

These sites are closest to what would be the current day Napster. They (legally) allow users to view and share a number of media files. YouTube is a popular site for sharing videos on virtually any topic, while Flickr allows users to post and view photos taken by other Flickr members. Users can also engage with one another via posting and commenting features. Flickr, and video sharing site Revver, are untypical in that they allow the photo or video creator to receive a portion of the royalty fees paid for downloads, or revenue generated from advertising, thus rewarding and reinforcing the important role of user generated content.

Social news and bookmarking

News is clearly shared more quickly with the advent of social media, but it is also shared and searched for differently. Delicious, Digg and Reddit are three of the more popular bookmarking sites that allow users to "tag" online content that they find interesting or helpful and then share it with other users. On some sites, such as Digg, other users can then vote to determine if the shared content was valuable to them (Chapman 2009). Pinterest, the 2011 Crunchie Award winner for best new start up, is the newest, and currently the most popular, version of this. It is a "pinboard-style social photo sharing website that allows users to create and manage theme-based image collections" (Wikipedia 2012).

Lifestreaming sites

Ustream.tv and Justin.tv are the most well-known lifestreaming sites. They allow visitors to watch various live videos as well as streaming video feeds, including those from security cameras, traffic cameras, and animal cameras. Most users do not offer constant video steams, but are instead only online occasionally (Chapman 2009).

Collaborative projects

As will be discussed, user generated content is an important aspect of successful social media platforms. Some organizations are relying on user participation to construct their entire site. Wikipedia is perhaps the most well-known example of this. The site is a free, web-based encyclopedia built by the collaborative knowledge of the user base. Anyone can log in and add content to the page for a given topic, and other users (plus the Wikipedia staff) monitor the site to make sure the information added by others is factually correct. Googledocs is another collaborative web-based service that allows users to work collaboratively and simultaneously on word, PPT and Excel documents, minimizing the need for groups or work teams to constantly send different versions of documents back and forth.

The Social Media 2.0 conceptual framework

Overall, the functionality and organization of the Social Media 2.0 technologies are dramatically different from those in version 1.0, and they operate within a different framework. One of the main differences is that users have certain expectations: they demand to be an integral player in

the social media world, helping to shape content and functionality. User generated content is a must, and users are not satisfied with sites that just talk "to" them and do not invite any kind of collaboration. According to Razorfish (2009), this use of social media to influence others is giving rise to completely new types of marketing; in this case, "Social Influence Marketing." Users now share more and more information freely with one another on the Internet in the form of posts, comments, videos, photos, ratings, reviews, articles, and blogs (Akar and Topçu 2011, p. 38.) Many people now turn to social media or networking sites not only to find recommendations or reviews on products or services, but also to voice highly negative or positive experiences they have had with a particular company (Euromonitor 2012). Users then generate online communities where they share this information, with many finding peer reviews to be more reliable than information coming from the business itself. In this way, user generated content influences the behavior of other consumers (Constantinides et al. 2010).

Social Media 2.0 has also intensified, or perhaps solidified, some of the concepts that began to take shape with Social Media 1.0, including the idea of *social proprioception*, which "tells us where the nodes of our community are and provides a sense of connectedness to and awareness of others without direct communication. Technologies like Twitter enable us to have this sense even when the members of our community are not within sight" (Thompson 2007).

It is important to consider what effect social media is having on traditional media, and at the moment, it's hard to say. Traditional media, such as CNN, BBC and the *New York Times* for example, are very active social media users, and although they allow users to be linked to other sites such as Facebook and Twitter, they are able to maintain their own identity and fan base (Euromonitor International 2010). Lievrouw and Livingstone (2006, p. 1) argue that "new media have not replaced older media, any more than broadcasting replaced print in the mid-20th century. Rather, people's information and communication environments have become ever more individualized and commodified, integrating print, audio, still and moving images, broadcasting, telecommunications, computing, and other modes and channels of communication and information sharing."

Although businesses know there are benefits to entering the social media world, many are still grappling with the best ways to use these new forms of communication to their advantage. A number of companies struggle with calculating the return on investment (ROI) associated with investing in social media. According to a 2011 survey, "one third of all social media marketers want to know how to monitor and measure the ROI of social media and integrate their social media activities" (Stelzner 2011). Others struggle to even understand the relevance or use of these new technologies. Twitter, for example,

> is controversial precisely because it does not have an elder analog; it is a cousin of instant messaging, but its broadcast nature marks it as a different type of communication. Twitter has been described as fun, trivial, innovative, addictive, a waste of time, and potentially a powerful social networking tool; but its implications for teaching, learning and creative expression, if any, are not yet fully understood.
>
> *(A White Paper from the New Social Media Consortium 2007)*

Figure 12.2 illustrates that, although the user is still central to the model, the focus has shifted from the user to the importance of user generated content, which impacts, directs, or in some cases is the integral part of these social media technologies. There has also been a change in the flow of information. Whereas historically users had to pull information from social media services, there is now a much more fluid "push and pull" transfer of information between the user and the technology platform or site.

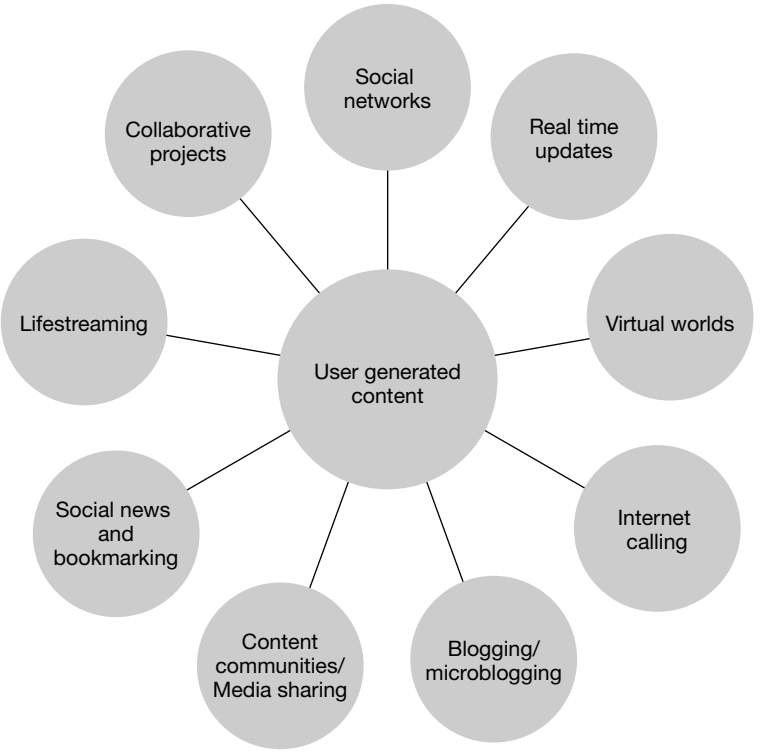

Figure 12.2 Current perspective on social media: conceptual framework

Future perspective on social media: Social Media 2.0+

So where does all this rapid innovation and exploding use of social media leave us? Some argue that we are in a relatively unpredictable place, with little in the way of experience or predictive models to shine any light on where the industry is going. What is clear is that companies in the social media space need to continue to innovate and excite users while demonstrating the value of using social media in their life.

Additionally, mobile social media is continuing to grow, with "nearly one third of all U.S. mobile users accessing social media services" on their phone (Van Grove 2011). And businesses understand that social media involvement is an essential component of the marketing mix. According to the current Chief Marketer Social Marketing Survey, 73% of businesses surveyed state that social marketing is a key component of their campaigns, and 15% say they expect to launch social initiatives in the coming year, while only 10% of businesses surveyed will not be using social media in the near future (Loechner 2011). Of these, almost 80% of companies targeting consumers surveyed use social media to reach their audiences, and another 13% plan to incorporate social media in their marketing in the next year (Loechner 2011).

The Social Media 2.0+ conceptual framework

The marketing practitioner literature in particular suggests that the future of social media presents itself as a "fusion" between company-generated rich media content and consumer-generated social media communication creating a more honest, authentic, balanced, and

comprehensive information source for companies' target consumers (Akar and Topçu 2011). Akar and Topçu (2011) further support this concept, stating that "social media marketing consists of multidirectional dialogs. Brands talk to the customers, customers talk to the brands, and—maybe most importantly—customers talk to each other. This situation is a new type of engagement that was impossible before Web 2.0" (p. 41).

According to Brian Solis, a prominent thought leader of new media, "companies of all sizes will need to transform their business and existing infrastructure … and to embrace all of the disruptive elements, such as mobile and social technology, in a new, cohesive organization that is focused outward and inward" (Awareness 2012, p. 3). According to Paul Gillin, another social media marketing expert, large campaigns from prominent companies will be developed with a social media component at their core, lighting the way to a new generation of sophisticated integrated marketing communications (Awareness 2012). Brands will attempt to optimize their overall approach to social media, taking social data to the next level: instead of focusing on measures such as reach and participation, brands will act on the insights of their social marketing metrics, using social profiles for more effective target marketing (Awareness 2012). Using social media will also improve the communication within the firm and raise the productivity of the customer service department by 20 to 25% (Bughin et al. 2012).

This integrated approach will benefit consumers the most: it was found that consumers who visit social media sites benefit from making better purchasing decisions than those who do not (DEI Worldwide 2008; Akar and Topçu 2011). Moreover, social media drives purchase. It was found that people trust social media connections: 90% of consumers trust social media recommendations and 67% of consumers' purchase decisions are influenced by social media content – comparatively, only 14% of consumers trust advertising (DEI Worldwide 2012).

Social media's value derived from its collaborative aspect is immense. Collaboration benefits are greatest for professional services (at 90%), followed by semiconductors (76%), retail banking (70%), aerospace (62%), life insurance (52%), property and casualty insurance (51%), automotive (43%), and consumer packaged goods (37%) (Bughin et al. 2012). While consumer package goods companies appear to lag behind other industries, even though they were the early adopters of social media, they have much to gain from leveraging social media benefits. Marketing and sales will benefit the most, as companies using social media can gain consumer insights at only 60% of the cost of traditional research, and consumer insights would also improve the speed of product development (Bughin et al. 2012).

Consequently, for optimum benefit, marketers will, in the future, place greater emphasis on fusion of all relevant social media into a cohesive and coherent marketing mix, creating an effective platform to micro-target the brand, but also creating a community around their brands, offering valuable content that is not only centered on the brand or industry.

Figure 12.3 illustrates this "fusion" of company/company generated content and user/user generated content as the force driving the future social media. This virtually endless chain of interactions is likely to result in several new social media technologies. At the same time the information clutter will exponentially increase. Segmenting, targeting, and positioning would therefore play a very critical role in the survival and success of new social media in the future.

Social media opportunities and challenges

Social media and marketing strategies

It is widely suggested that businesses could potentially use social media more effectively and strategically, for example evaluating the return on investment associated with their media use,

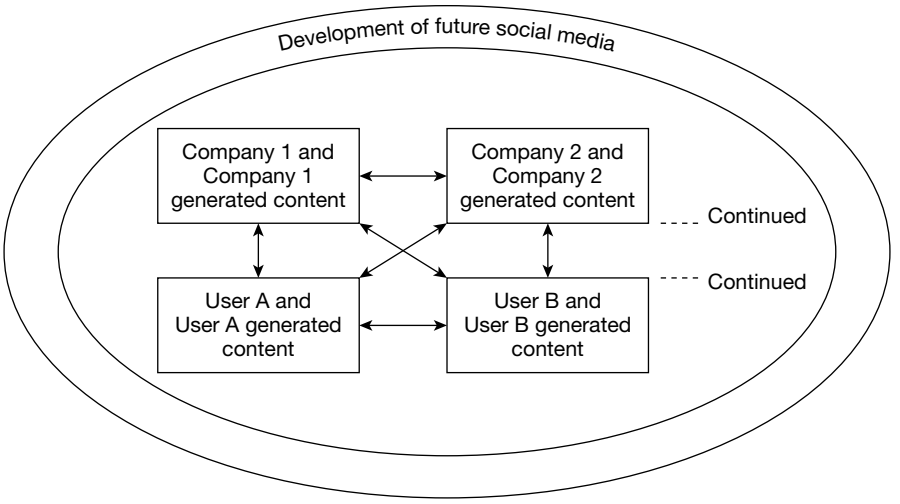

Figure 12.3 Future perspective on social media: conceptual framework

and even disseminating their own social media content in order to leverage their social media footprint (Euromonitor 2010). In addition, businesses can use social media data in order to make product performance predictions. Research (Asur and Huberman 2010) has shown that the information available in social media markets is a better indicator of product or service performance than data obtained from surveys or opinion polls. Researchers can aggregate opinions of the broad population to gain insights into their behavior and to offer insights into future trends, or they can gather information on the online dialogue regarding a particular product, examining buzz and attention for different competing brands in order to design more effective advertising campaigns (Asur and Huberman 2010). In other examples, search counts were found to predict consumer activities – such as attending movies and purchasing music or video games – that are likely to take place days or even weeks in the future (Goel et al. 2010).

Data collection using social media is also much less costly and cumbersome than collecting data using surveys and other traditional customized data collection techniques. Social media data can be collected for many domains simultaneously and it is easily analyzed, offering speed (the data can be obtained in real time), flexibility, and convenience across various domains (Goel et al. 2010).

Life cycle of social media

Integral to all the social media constructs – but most relevant to the future of social media – are the inevitable life cycle scenarios where online social media as we know it, or in its anticipated mobile form, loses its potency and experiences the fatigue and ineffective attributions we now observe in the case of telemarketing and other "tired" media vehicles. This scenario has played out before in both the historical and current social media frameworks, as many sites have skyrocketed in popularity, only to burn out. The Globe (inventor of current social media) – lasted 14 years; Six Degrees (inventor of social network) – 4 years; Friendster – 9 years; and there are many other sites that were the "next big thing," only to close their doors quickly thereafter (Edwards 2011).

In these possible scenarios, social media may lose its power and even its significance. Already, consumers are defecting from social communities where they perceive undue brand and

company presence, or even at the mere sight of banner or interstitial ads at the point where domain owners attempt to monetize their website. Facebook, which has been criticized over privacy concerns, monetizing the site and selling user information, is now viewed as unfavorable by 28% of Americans, which is more than double the number of people who have an unfavorable opinion of Apple or Google (Sutter 2012).

An argument is emerging that social media overall, as well as some sites (such as Facebook) are plateauing, or even losing their footing. In a 2011 article, Ted Wasserman suggests that the main innovation to the current social media world has been microblogging. But since Facebook introduced microblogging via status updates, the only social media changes have been refinements to that technology, including the concepts central to Twitter, Foursquare, GetGlue and Instagram. He supports this argument by looking at the major leaps we saw in personal computing with the Mac, or how the iPhone changed the mobile phone industry. Similarly to what is occurring in social media, after those major innovations, competitors mainly relied on tweaking that technology, not inventing something entirely new. Additionally, joining rates for some of the most popular sites are decreasing, and some users seem to be walking away from social media. According to a 2011 Gartner survey, "social media fatigue" is certainly evident in certain social media groups.

> The trend shows some social media fatigue among early adopters, and the fact that 31 percent of Aspirers [younger, more mobile, brand-conscious consumers] indicated that they were getting bored with their social network is a situation that social media providers should monitor, as they will need to innovate and diversify to keep consumer attention.
>
> *(Gartner 2011)*

User fatigue, coupled with the challenges of using social media successfully in a business setting, are two of the biggest challenges that social media companies will face as we move into the next phase of social media use.

Social media and segmentation strategies

In this current stage, it is possible to start building consumer profiles based on their use of social media to create segments that are distinct behaviorally from other segments. Forrester Research (2009) fielded a survey to 10,111 individuals ages 18 to 88 and, based on their findings, created the Social Technographics Ladder, which includes, at the top of the ladder, creators (24% of social media users) who either publish a blog, their own web pages, upload videos or music/audio they created, or write articles or stories and post them. At a lower level of use are conversationalists (33% of social media users) who update their status on a social networking site, or post updates on Twitter. Next are the critics (37% of social media users), who post ratings and reviews of products and service, comment on others' blogs, contribute to online forums, or contribute to articles in a wiki. Following are collectors (20% of social media users), who use RSS feeds, vote for websites online, or add tags to web pages or photos; joiners (59% of social media users), who maintain a profile on a social networking site and visit social networking sites; spectators (70% of social media users), who read blogs, listen to podcasts, and watch videos from other users; inactives (17% of social media users), who do not engage in any of these activities (Forrester Research 2009).

In the future, businesses can actively target with social media initiatives the segment that best fits with their strategies. For example, for the creators, companies could create possibilities for them to create product-related content that would ultimately promote the company's brand. In

addition, companies could identify micro-segments based on social media use that they could target more effectively.

Research with executives leading social media initiatives (Wilson et al. 2011) revealed four distinct social media strategies, based on the company's tolerance for uncertain outcomes and the results sought. The "predictive practitioner" confines usage to a specific area (customer service, for instance) and it helps businesses avoid uncertainty and deliver results. For example, Clorox Connects is a website that helps Clorox brainstorm with customers and suppliers on product ideas; those with the best idea gain visibility, "making participation rewarding and sticky" (Wilson et al. 2011). The "creative experimenter" embraces uncertainty using small-scale tests to improve functions and practices, listening to customers on platforms such as Twitter and Facebook. The "social media champion" involves large initiatives designed for predictable results, and it requires collaboration across multiple functions and different parties. For the 2009 Ford Fiesta Movement campaign to introduce the brand to the U.S. market, Ford held a contest to identify 100 candidates who were given Fiestas for 6 months and who were asked to use social media to discuss their experiences; within the 6 months, the drivers posted more than 60,000 items, which garnered millions of clicks, including more than 4.3 million YouTube views, resulting in a brand awareness rate of 37% among Millennials, generating 50,000 sales leads to new customers, and prompting 35,000 test-drives (Wilson et al. 2011).

These types of initiatives are more likely to be commonplace in the future, as companies will take on creative initiatives that will involve social media.

Social media analytics

While spending on social network advertising is currently at over $2 billion yearly, there needs to be greater understanding of measurement of the effectiveness of advertising on these sites (Hartmann et al. 2008). Measures of social media influence abound. Among them are: Klout, which measures your social media influence using data from Twitter, Facebook, LinkedIn, and Foursquare; TwentyFeet, which pulls data from Facebook and Twitter and presents it in graph form; Crowdbooster, which determines when your posts will receive the most interaction and have the most influence on your audience and recommends the best times to tweet the following day; and My Web Career, which analyzes data from Twitter, Facebook, LinkedIn, Quora, and web search results to determine your score – the data are based on the size of your network, your overall social media presence, and the strength and reliability of your connections (Mackay 2011).

The volume of information captured by social media, the internet, and multimedia is captured into large data sets – known as big data; this big data will quickly become the basis of competition for products and services in the marketplace (Manyika et al. 2011). Big data is expected to offer important advantages; for example, a retailer using big data is potentially capable of increasing its operating margin by more than 60% (Manyika et al. 2011). Focusing on the social interactions in various domains (Facebook, MySpace, and others) and modeling the data to understand the implications of interactions among agents will allow managers to observe how it is possible for a stimulus targeting a single individual to be magnified and multiplied by its dispersion through a person's social network (Hartmann et al. 2008) and to use this information to their advantage.

Businesses appear to have endless possibilities for using social media data; however, it is important for them to understand how social media data perform. For example, Godes and Silva (2012) examined product ratings data and found that product ratings decrease over time, especially when previous reviewers are very different. In other related modeling examples,

research has found that ratings behavior is affected by previously posted ratings, and the effect on sales resulting from this social dynamic is significant; yet, when marketing practitioners contribute comments of their own to create more positive ratings, they improve sales, but the analytics suggest that the effect is short-lived (Moe and Trusov 2011).

Conclusions

It is evident that social media as a whole is becoming increasingly prevalent in our society, and continues to impact the ways in which people communicate with one another. Not as certain is where social media is in its overall life cycle, and what kind of innovation will come along in the market in coming years.

The current analyses and trends suggest that the future of social media will become a more seamlessly integrated networking platform that will enable companies to keep pace with users' increasingly mobile existence.

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13

Brand engagement

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Abstract

As consumers become more informed about brands and products, they are more demanding about the role these brands and products play, not only in the market but also in the world. They are more conscious of consumer empowerment and brand-talk: The "consumers-listen" model is no longer a way to achieve success in the market. New brand–consumer relationships are needed. Brand engagement emerges as a promising construct to develop and maintain these relationships. In this chapter, we first analyze the main changes in marketing during the new millennium and its main effects on consumer behavior, pointing out the need for a brand–consumer reconnection. Then we conceptualize brand engagement as a multidimensional construct and develop a conceptual framework for brand engagement research. A brand engagement research agenda is also proposed. Finally, managerial implications for the refinement of the brand engagement concept are discussed as well as the need for the development of a brand engagement scale.

Key words

Brand engagement, consumer behavior, relationship marketing, service-dominant logic.

Introduction

The world has changed drastically over the last 30 years as a consequence of geopolitical and market challenges driven by globalization and information technology popularization. Offshoring processes, transnational exchanges of products and workers, and increasing worldwide market integration are still redefining a new global arena for marketing and business. In a highly price-based competitive marketing environment with low-cost producers in areas like Asia or South Pacific, brands have become key strategic assets for marketers. Branding has become a key marketing priority for most companies. Despite this key role of brands in today's markets, there is little consensus on how brands and branding should be developed in the modern interactive marketplace where customers have access to massive amounts of information about brands, products, and companies and where consumers are generating content, co-producing meanings

and values, and finally engaging with brands. Building strong brands is a management goal pointed out by the Marketing Science Institute in its priorities for 2010–12. Addressing such a goal, academics have devoted growing attention to customer engagement since this decade, and the literature is growing (Brodie et al., 2011). The Journal of Service Research has played a salient role devoting a special issue in 2012.

The evolution of web 2.0 and the rise of social networking sites like Facebook or Twitter are encouraging more complex network-based interactions; 20% of worldwide population will use social networking sites this year (eMarketer, 2012) and 86% of Americans aged 18–29 are currently using them (Pew Research Center, 2012a). The Internet has become both a promising tool for brand communications as well as a dangerous territory where brands do not always take the lead. This technological context encourages an increasing role of consumers in brand–consumer interactions—consumer empowerment, *prosumers*, brand evangelism, anti-brands activism, brand appropriationism, brand communities—demanding new marketing models for marketers to better manage all those promising but potentially hazardous interactions. Within this context, traditional marketing constructs such as brand involvement, brand attachment, or brand commitment do not fully explain these new brand–consumer interactions, demanding new constructs to better understand new consumer behaviors in a much more complex marketplace environment.

Relationship marketing emerged in the mid-1980s (Berry et al., 1983), highlighting the key role of consumer-based interactions (Grönroos, 1989; 2004) and having current theoretical and applied developments (Ashley et al., 2011). Within this framework, brands can and do serve as relationship partners (Fournier, 1998). Although brands are not vital entities, they can be anthropomorphized and to some extent animated through marketing actions, inviting consumers to think and interact with them as if they were human partners. This view also leads to a better understanding of the type of consumer–brand relationships that embrace human behaviors such as love, intimacy, or commitment (Fournier, 1998). We argue that consumers are able to engage with brands, building up holistic relationships.

Engagement is gaining momentum among both practitioners and scholars as a key factor of such new consumers' behaviors from developing a brand amateur ad to become a brand fan in a social networking sites fan page. Despite this increasing interest in brand engagement as a marketing concept, there is a lack of consensus regarding the appropriate definition, forms, dimensionality, and operationalization of the concept (Hollebeek, 2011). This chapter aims to fill this research gap by (i) conceptualizing brand engagement, (ii) proposing a research framework for brand engagement, (iii) delineating a brand engagement research agenda, and (iv) discussing main managerial implications.

This chapter is structured as follows: First, we analyze key technologically driven changes in the recent marketing environment that have increased the role of brand–consumer interactions. We analyze technologically driven changes, focusing on the Internet as the richer context for new brand–consumer interactions and behaviors. We pay special attention to millennials' technology-related behaviors because they are a key future consumer generation. Second, we review the brand engagement literature to conceptualize it as a marketing concept. Then we propose a research framework for brand engagement with three antecedents—rational, emotional, and behavioral commitment—leading to brand engagement and three brand engagement outcomes (cognitive, affective, and conative responses). Fourth, we suggest a research agenda for brand engagement based on the previously proposed framework. Finally, we discuss main managerial implications for brand engagement.

Consumers in an Internet-driven world: the millennial era

Technology—and especially communications technology—is one of the main forces of change in today's world, shaping the way people not only communicate and work but think and behave. The advent of the Internet can be considered a milestone in human communications (Castells, 2001) that affects all human activities, from communication to business or leisure. The Internet is not only changing the way we access brands and product information but the way we share it, and the way we interact and consume those brands and products in a global market. The first issue—the relationship between brands and technology—must be analyzed in the context of brand management in an information society ruled by the Internet. The second issue—the new roles consumers adopt when consuming brands—must be analyzed in a context of new consumer behaviors driven by information technology.

Some of those changes in consumer behavior driven by information technology are deeply affecting the way we interact with our world. In 2005, nearly half of today's written communications were performed by e-mail (49%) versus 13% via pen and paper (IPA, 2005). Pen and paper communications represented just 5% of written communications for 15–24-year-old users, who mainly communicated through SMS, e-mail, and instant messaging. This communication pattern demonstrates change in the way people communicate today. In 2011, the reading habits of American adults also started to change when one-fifth of American adults used e-books (Pew Research Center, 2012b). These technologically driven changes are going global, including in less-developed countries. Regarding purchase-related activities in 2011, 47% of the 60% of Americans who seek information about local business relied on the Internet as a main source of information with search engines representing 36% and specialty websites/social networking sites representing 16% and 1%, respectively (Pew Research Center, 2011). Regarding mobile Internet, 30% of smartphone owners have performed online searches before deciding to visit a business like a restaurant (Pew Research Center, 2012c). These fast changes are driven both by technology and by consumer behaviors.

The millennial era started with the threat of the so called effect 2000, highlighting the importance of computer networks in today's human interactions. Those computer networks have now evolved to smart crowds based on virtual communities with mobile Internet enhancing the power of ubiquitous consumer interactions in a new marketing context based on time and space transformations.

Brands in an Internet-driven world

As a core element of the Information Society (Castells, 2000), the Internet is driving new marketing practices, from e-branding to e-commerce (Cao, Zhang, & Seydel, 2005). One of the main effects of the Internet on brands is that customers have access to massive amounts of information about brands, products, and companies (Keller, 2009). In fact, searching and e-mail remain core Internet activities (Pew Research Center, 2012a) as consumers can use the Internet to access products and brand information, including price comparisons at a low acquisition cost and in a time-saving way. The Internet can serve not only to inform consumers about brands and products but to persuade them about using those brands and products, or to sell them using the Internet as a distribution channel. It also empowers the role of consumers in all these interactions. In fact, the *consumer factor* can be one of the most unexpected factors influencing marketing actions on the Internet. Consumers do not just rely on product information provided by brands and organizations as the Internet provides alternate sources of information for consumers from bloggers to consumer-generated content on social networking

sites like Facebook or Twitter in a non-hierarchic media context that challenges the balance of asymmetric information models in traditional media like television or print. The interactive nature of the Internet both encourages and demands a proactive consumer behavior from searching a brand website to navigating through it. Consumer involvement in increasing brand-related activities is forcing brands to reconsider the role that consumers play in their value chain in a context that has been called *wikinomics* (Tapscott & Williams, 2006).

The main effects of an Internet-driven world on brands can be analyzed at a macro-brand or micro-brand marketing communications level. At a macro level, brands must deal with (i) branding in a 24/7 global context (pervasive branding), (ii) real-time customer relationships through e-CRM, (iii) deeper consumer involvement (online brand communities), (iv) consumer criticism (anti-brand activism and consumerism websites), (v) consumer appropriation, and (vi) click distance (consumer's access to global competitors). At a micro level, brands must deal with (i) richer marketing communications (including text, sound, video, and interactive animations), (ii) custom-based messages (personalization), (iii) consumer-controlled messages (i.e., permission marketing), (iv) real-time feedback, (v) increased consumer sacrifice (more time and elaboration-demanding messages), (vi) loss of control (including consumer-generated brand messages and brand impersonation), and (vii) ubiquitous messages (time and context independent). Table 13.1 depicts the main benefits and hazards of the Internet to brands at these macro and micro levels. For instance, the role of the consumer in marketing communications as a broadcaster of brand-related information can both benefit and damage brands and products. Benefits include consumer evangelism (Matzler et al., 2007) and viral marketing (Phelps et al., 2004) while hazards include consumer activism like anti-advertising or anti-brands movements (Kozinets & Handelman, 2004). The Internet empowers all those actors engaged in brand-related activities, allowing them to reach a global audience.

All those factors can be observed on the world wide web, which is a medium with "constant message delivery, audience selectivity, multimedia capacity, measurable effects, global reach, audience controlled advertising exposure, and interactivity, making it, along with its components, an advertising medium as well as a customer communications forum and channel of distribution"

Table 13.1 Main benefits and hazards of the Internet at brand and marketing communications levels

Level	*Benefits*	*Hazards*
MACRO (BRAND)	• Brand building 24/7 (websites) • Stronger relationships (consumer sign in) • More consumer involvement (online brand communities) • Media synergy (Integrated marketing communications)	• Consumer criticism (brand activism and consumerism web sites) • Click distance (access to global competitors) • Consumer appropriationism
MICRO (BRAND MARKETING COMMUNICATIONS)	• Richer messages (multimedia) • Custom-based messages (personalization) • Deeper interaction (interactivity) • More consumer control • Ubiquitous messages (anytime, everywhere) • Real-time consumer feedback • More exposure time • Co-creation (including brand evangelism)	• Loss of message/brand control (consumer-generated brand messages including brand impersonation) • Increased consumer sacrifice. (more time and elaboration demanding)

(Korgaonkar & Wolin, 2002, p.192). Web 2.0 represents a new milestone in the development of the Internet with special attention paid to social networking sites like Facebook, through which users can easily contact other users and exchange information, including photos or videos, personal blogs, group discussions, real-time messaging, or e-mails, thereby enhancing social interaction (Hsiao, 2011; Wang et al., 2010).

Brands and new consumer behaviors

Technology is also driving new consumer behaviors from product customization (e.g., My M&M's) to prosumption—processes in which consumers simultaneously act as producers and consumers, such as in open source activities, wikis, or folksonomies. These highlight the interactive role of consumers in today's consumption processes. Consumers are also increasingly engaging in creative and co-creative online activities to satisfy their cognitive, affective, and socially based needs (Hemetsberger, 2003) with implications for brands (Hatch & Schultz, 2010). As new and more technology-savvy consumers access the markets, new concepts such as consumer engagement, co-creation value, open brands, prosumers, e-wom, e-fluentials, or online brand communities become key elements to understanding success factors in the markets of the future. Millennials, or Generation Y, can offer important insights into consumer behavior trends and deserve special attention because they were entering adulthood at the start of the new millennium, becoming the consumers of the future. They are the most educated and technology-savvy generation ever and feel distinctive because of their use of technology. Three quarters of them have created a profile on social networking sites compared to half of Generation Xers or 30% of Baby Boomers (Pew Research Center, 2010). Other important generation gaps include video games playing habits or using wireless technology. The "always on" millennials are digital natives (Prensky, 2001) and experts on technologies such as cloud computing software and applications (Gmail, Prezi, or Pinterest) and hardware like tactile devices (mobile smartphones and tablets) through which they interact with the world (texting, sharing, or uploading content).

Millennials are also more likely than older adults to feel that technology makes life easier and brings family and friends closer together, highlighting the active role that technology and virtual communities represent for their social interactions. Millennials are also more likely than other generations to seek entertainment through online videos, online gaming, virtual worlds (Second Life), and downloading music (Pew Research Center, 2009). Their proactive use of the web makes them not only read other people's blogs but write their own. They also seem to be less concerned about privacy issues, feeling that disclosure of personal information can benefit them both personally and professionally (Pew Research Center, 2012d). They can be seen as potential e-commerce targets as they become prominent in such activities as online banking and making their travel reservations online (Pew Research Center, 2009).

Millennials' profiles allow us to picture a future digital native consumer who values information sharing, from personal to professional or brand-related information, including not only editorial content but also branded content (i.e., advertainment, advergames) and consumer-generated content (reviews, blogs entries, ratings) in cloud computing online networks (social networking sites or online brand communities). These can be accessed through multi-platform devices (laptops, tablets, smartphones, SmartTV), allowing pervasive ubiquitous interactions leading to important brand building transformations. Table 13.2 depicts an analysis of these two main drivers, new technology-driven changes and new consumer-driven behaviors, leading from traditional branding to future branding within a marketing communications context. The former embraces one-way communications (brand to consumer) in a non-interactive context and considers consumers to be passive receptors of brand communications while future branding

Table 13.2 Interaction scenarios in marketing communications resulting from technology and consumer changes

Consumer-driven behavior		Low interaction context Technology-driven changes	High interaction context
	New	Enhanced brand interactions – QR codes – augmented reality	Full brand interactions – user-generated content – fan pages (social media) – mobile applications – advergaming
	Old	Basic brand interactions – printed ads – radio slots – TV commercials	Advanced brand interactions – podcasts – brand TV – online advertising (banners, pop-ups)

develops in a two-way interactive communication context (brand to consumer, consumer to brand, consumer to consumer) with consumers acting as active players in the brand communication process.

Due to increasing consumer and market changes, new models and metrics for marketing outcomes are needed. Brand engagement can explain not only how this new brand–consumer interaction occurs but the key drivers leading, encouraging, and enhancing it. From brand fans to brand evangelists, brand engagement can help to explain why some brands are chosen by consumers for interaction and the investment of a considerable amount of time, money, and other personal resources that result in a mutual benefit. In a highly competitive market environment, traditional constructs such as satisfaction or involvement seem not to guarantee long-term relationships. In an always-on interactive communication context, a new marketing approach seems to emerge fuelled by pervasive communications on social networks; emotional bonds driven by closer brand–consumer interactions; and personal attachment to symbols, communities, and behaviors that can be driven by brands providing values and meanings consumers are willing to engage with.

Brand engagement represents an emerging marketing concept (Hollebeek, 2011) both in a practitioner's context (PwC, 2010; ARF, 2006; Roberts, 2004; Stengel, 2005; Applebaum, 2001) and as a marketing research area for scholars (Brodie et al., 2011; Hollebeek, 2011; Sprott, Czellar, and Spangenberg, 2008; Keller, 2009). Some benefits of brand engagement as an emergent marketing construct include enhancing the limitations of traditional marketing constructs such as perceived quality or customer satisfaction in explaining and predicting customer behavior outcomes such as customer loyalty (Sureshchandar, Rajendran, & Anantharaman, 2002; Taylor & Baker, 1994).

Brand engagement as a multidimensional construct

The engagement concept has received broad and recent attention across a range of academic disciplines, including education, sociology, psychology, political science, and organizational behavior (see, e.g., Ilic, 2008; Hollebeek, 2011; Brodie et al., 2011). Because engagement is a context-specific concept, its meanings have varied widely, presenting potential variations in the interpretation of the concept (Little & Little, 2006). Marketing literature (see Table 13.3 for a

Table 13.3 Constructs, definitions, key engagement tenets, and dimensionality found in the literature review

Author	*Construct*	*Definition*	*Key engagement tenets*	*Dimensionality*
Hollebeek (2011)	Customer brand engagement	The level of an individual customer's motivational, brand-related and context-dependent state of mind characterized by specific levels of cognitive, emotional and behavioral activity in direct brand interactions.	State of mind, individual-level variable, motivational variable, context-dependent variable, two-way interactions (subject: customer / object: brand), outcome: direct brand interactions.	Multidimensional (cognitive, emotional, and behavioral)
Brodie et al. (2011)	Customer engagement	Psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (i.e., a brand) in focal service relationships.	Psychological state, individual-level variable, two-way interactions (subject: customer/object: variable).	Multidimensional (cognitive, emotional, and behavioral)
Bowden (2009)	Customer engagement	A psychological process that models the underlying mechanisms by which customer loyalty forms for new customers of a service brand, as well as the mechanisms by which loyalty may be maintained for repeat purchase customers of a service brand.	Psychological process, individual-level variable, two-way interactions (subject: customer/ object: brand), utcome: loyalty.	Multidimensional (inferred)
Sprott et al. (2009)	Brand engagement in self concept (BESC)	An individual difference representing consumers' propensity to include important brands as part of how they view themselves.	Individual-level variable.	Unidimensional
Keller (2009)	Active engagement	The willingness of consumers to invest personal resources in the brand—time, energy, money—beyond those resources expended during purchase or consumption of the brand.	Contextual process, individual-level variable, two-way interactions (subject: consumer /object: brand).	Multidimensional (inferred)

Author	*Construct*	*Definition*	*Key engagement tenets*	*Dimensionality*
Illic (2008)	Consumer engagement	A contextual process that consists of interactions with "engagement object(s)" over time and may exist at different levels.	Contextual process, two-way interactions (subject: consumer/ object: variable).	Multidimensional (cognitive, emotional, behavioral, aspirational, social).
Patterson et al. (2006)	Customer engagement	The level of a customer's physical, cognitive and emotional presence in their relationship with a service organization.	Individual-level variable, two-way interactions (subject: customer/object: organization).	Multidimensional (vigor, dedication, absorption, interaction).
Algesheimer et al. (2005)	Brand community engagement	Positive influences of identifying with the brand community through the consumer's intrinsic motivation to interact/ cooperate with community members.	Individual-level variable, two-way interactions between subjects: (customers).	Multidimensional inferred (cognitive, emotional and behavioral).

summary) shows a wide approach and conceptualization of the concept that is indistinctly referred to as consumer engagement, customer engagement, or brand engagement, adopting different approaches, meanings, and foci. From a broader perspective, brand engagement has been analyzed as a customer process generally referred to as consumer or customer engagement (Brodie et al., 2011; Kumar et al., 2010) or customer brand engagement (Hollebeek, 2011). This customer engagement has also been conceptualized in terms of a psychological state (Mollen & Wilson, 2010) or a psychological process driving customer loyalty (Bowden, 2009). From a narrower perspective, brand engagement has been conceptualized as a generalized view of brands in relation to consumer self, measured as a tendency to include important brands as part of self-concepts (Sprott, Czellar, & Spangenberg, 2008). The lack of consensus regarding the appropriate definition, forms, dimensionality, and operationalization of the concept (Hollebeek, 2011) demands a clearer conceptualization of brand engagement. In this section we critically analyze main conceptualizations, including definitions and dimensionality of the brand engagement concept, to offer a working brand engagement definition.

Based on prior literature, we define brand engagement as "a brand-evoked consumer psychological state based on a brand–consumer identification fuelled by brand–consumer interactions" where brand–consumer interactions are considered to be cognitive (brand-related thoughts), emotional (brand attachment), and behavioral (willingness to cooperate with the brand) interactions.

We argue that brand engagement literature clearly suggests brand engagement as an individual-level variable. Three types of psychological brand engagement may be distinguished (Schmitt, 2012): functional, self-centered, and social. The first is object-centered and functionally driven; the second is personally relevant to the consumer; and the third is viewed from an interpersonal and socio-cultural perspective. We propose brand–consumer identification as a key factor at this individual level for consumers' engagement with brands. Identification is important because of its contribution to the development of self-identity and is related to our perception of others and how they view us (Cohen, 2001). Brand identification is defined as "the extent to

which the consumer sees his or her own self-image as overlapping the brand's image" (Bagozzi & Dholakia, 2006, p. 49) and is also known by others as self-image congruence and self-connection. The brand love literature (Batra, Ahuvia, & Bagozzi, 2012) provides both theoretical and empirical support for the important role of identification in brand–consumer engagement. Brand identification is an antecedent of brand loyalty and brand love, which leads to respondents' active engagement. Batra, Ahuvia, and Bagozzi (2012) found integration of the loved brands into consumer identity to be a central aspect of brand love. Respondents strongly identify with the things they love, reflecting "the important function of loved brands in expressing existing identities and enacting desired identities" (Batra, Ahuvia, & Bagozzi, 2012, p. 4). This is consistent with the ways consumers use brands to construct or project their identity (Belk, 1988; Escalas & Bettman, 2003; 2005). We assume that for brand engagement to happen it is necessary that consumers identify with brands. We also assume that this identification will be stronger when more existential meanings, life values, and lifestyles are involved.

Literature also shows the importance of subject/object interactions in conceptualizing brand engagement (Schmitt, 2012). Brodie et al. (2011) highlighted that "specific interactive experiences are an indispensable component of a customer's particular engaged state" (cf. Van Doorn et al., 2010, p. 259). Mollen and Wilson (2010) distinguished involvement (Mittal, 1995; Zaichkowsky, 1985) from engagement because of the proactive, interactive customer relationship of the latter satisfying both experiential and instrumental value. Hollebeek (2011) distinguished engagement from involvement because of the behavioral aspect of engagement in addition to cognitive and/or emotional facets that lead her to treat involvement as an antecedent of customer brand engagement. Brodie et al. (2011) found this consistent with the view of customer engagement within the service-dominant logic (Vargo & Lusch, 2004; 2008) that highlights interactivity and customer experience (Vargo, 2009). Consumer engagement in frequent interactive behaviors as well as frequent thinking about use of a brand (Park et al., 2010) is also important for a brand to become a legitimate "relationship partner" (Fournier, 1998). Despite these assumed subject/object interactions, differences arise when defining the subjects/objects involved in these interactions.

While some authors focus on a narrower perspective (customer/brand interactions) (Mollen & Wilson, 2010; Bowden, 2009; Sprott et al., 2008; Algesheimer et al., 2005) others adopt a wider perspective, assuming both subjects (customer, firm) and objects (brands, ads, organizations, governments) can vary (Brodie et al., 2011; Hollebeek, 2011). We propose a narrower object brand-based perspective for brand engagement conceptualization as a target for consumer interactions. We adopt a consumer-based perspective and not a customer-based perspective because the latter implies transactional actions and consumer value goes beyond transactional actions (Kumar et al., 2010) (word-of-mouth activity, customer-to-customer (C2C) interactions, and/or blogging activity) (Van Doorn et al., 2010) or even product innovation (Sawhney et al., 2005). Focusing in the brand as the object of interaction differentiates brand engagement from other related constructs like customer engagement, in which several objects (brand, firm, organization) may be involved simultaneously.

Within social interactive behavior literature, engagement has been characterized as a transient state occurring within broader relevant engagement processes, developing over time (Bryson & Hand 2007; Huo, Binning, & Molina, 2009). But marketing literature indicates that engagement may be viewed "as a state or outcome variable existing at a particular intensity at a specific point in time, and with differing engagement intensities" (Hollebeek, 2011, p. 788). We argue that brand engagement is a consumer psychological state at a specific point in time and thus is an outcome of the customer engagement process (Brodie et al., 2011). Hollebeek's (2011) dynamic model of key engagement facets offers theoretical support to these "specific engagement levels at a particular point in time, representing relevant engagement states" (p. 788) within a broader customer engagement process.

Regarding dimensionality, engagement has been conceptualized both as a unidimensional and a multidimensional concept though the latter has received more support. Despite the prominence of the three-dimensional perspective—cognitive, emotional, and behavioral—Brodie et al. (2011) remarked that "over 40% of the definitions reviewed in the academic and business practice literature expressed engagement as a unidimensional concept and as such, focused on either the emotional, or cognitive, or behavioral aspect of engagement" (p. 254) with the behavioral dimension appearing dominant within the unidimensional perspective. We propose brand engagement as a multidimensional construct involving cognitive, emotional, and behavioral dimensions. Attribute-based evaluations are relevant in the brand love context (Batra, Ahuvia, & Bagozzi, 2012), so rational and utilitarian-based constructs such as calculative commitment (Bowden, 2009) may have a relevant role in developing brand–consumer rational bonds in the brand engagement context. Emotional connection to a brand also emerged as an important aspect highlighting the importance of the emotional dimension for the brand engagement concept. Emotional bonding and anticipated heartbreak was a theme that emerged in Batra, Ahuvia, and Bagozzi´s (2012) brand love study, in which "bonding and attachment was frequently evident in pervasive comments that respondents knew they loved a brand because it was unique and irreplaceable and thus would be missed if lost" (p. 4). Affective commitment goes beyond purely cognitive beliefs and can determine future loyalty behaviors (Mattila, 2004). The behavioral dimension of brand engagement involves all kinds of consumer willingness to invest time, energy, money, or other resources in the brand.

A conceptual framework for brand engagement

Two main theoretical backgrounds can be retrieved to show brand engagement as a conceptual-based construct instead of just a simple new commercial trend. First, relationship marketing provides a solid background for embracing the brand engagement construct due to its conceptualization of a brand–consumer context to develop active relationships based on brand–consumer bonds (Fournier, 1998). This framework assumes long-term relationships where relationship commitment provides a key background because of being based on "an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship is worth working on to ensure that it endures indefinitely" (Morgan & Hunt, 1994, p. 23).

Second, the service-dominant logic (Vargo & Lusch, 2004; 2008) and the "expanded relationship marketing" perspective (Vivek, Beatty, & Morgan, 2010) are also suitable approaches to anchor the brand engagement construct because the "specific consumer behavior outcomes are generated by customers' particular interactive, value co-creative experiences with organizations and/or other stakeholders" (Brodie et al., 2011, p. 253). In this context, relationships require co-creating value with customers as "an integral part of the provider's marketing process directed towards how promises made, or value propositions suggested, are kept" (Grönroos & Ravald, 2011, p. 17). This framework assumes a much more consumer-centric approach than previous marketing frameworks and suits well today's online interactive marketing environment.

In spite of a lack of consensus, some literature suggests a three-dimensional approach—cognitive, emotional, and behavioral—to brand engagement. We suggest a necessity for cognitive, emotional, and behavioral commitment for a customer to engage a brand. There are three dimensions of brand engagement: rational commitment, emotional commitment, and behavioral commitment. In this integrative framework, we also analyze three brand engagement outcomes (cognitive responses, affective responses, and conative responses). Figure 13.1 presents the proposed framework model.

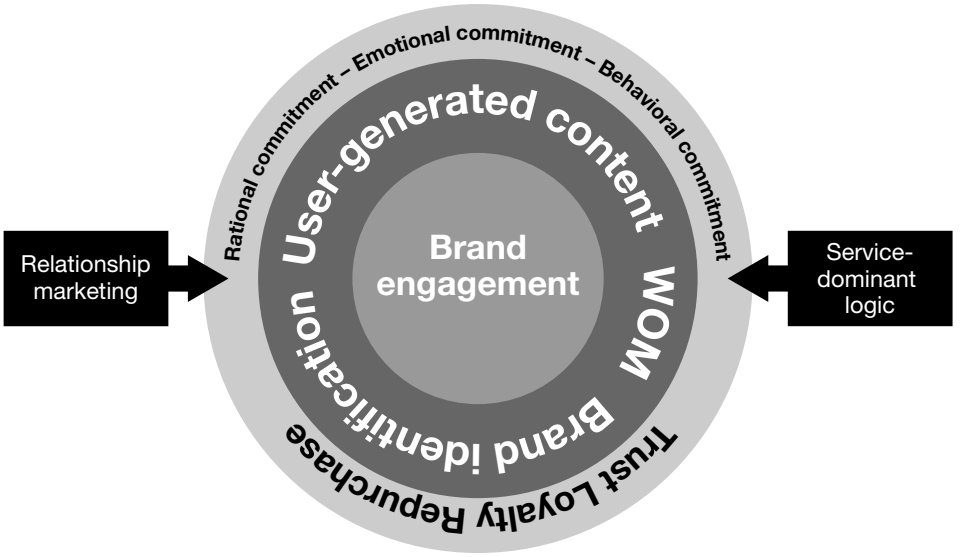

Figure 13.1 Proposed framework model for brand engagement research

Rational commitment

This dimension underlies the rational and utilitarian drivers for brand engagement. Even in a brand love context (Batra, Ahuvia, & Bagozzi, 2012), a great quality/qualities component such as performance or trustworthiness emerged as relevant for consumers; brand love was not unconditional. This highlighted the effect of attribute-based judgments. The calculative commitment construct (Bowden, 2009) infers a reliance on an attribute-based analysis by the costumer and can offer a framework for investigating the rational bonds involved in brand engagement. It is also noteworthy that Batra, Ahuvia, and Bagozzi (2012) found that despite respondents feeling that brands cannot respond to their emotional love, they felt this love was returned when the brand benefited them. Such a finding suggests the importance of extrinsic motivations like rewards as a way for brands to transform their lack of emotional response into utilitarian responses that could enhance consumers' rational commitment. Mollen and Wilson (2010) also referred to "instrumental value"—including utility and relevance—among their brand engagement dimensions, reflecting the need to explore utilitarian variables such as perceived utility or brand relevance within the brand engagement context.

Brand relevance theory (Aaker, 2004; Riesenbeck & Perrey, 2006; Kapferer & Laurent, 1992) can explain consumers' rational commitment to brands. While calculative commitment (Bowden, 2009) explores intrinsic brand attribute-based variables such as price, performance, or reliability, brand relevance expands attribute-based variables comparing them to other brand offers as well as introducing the brand factor in consumer judgments (whether the brand plays an important role compared to other decision criteria like price or product quality; whether the brand is an important decision criterion; whether it is important for consumers to buy branded products (Hammerschmidt et al., 2008)).

Emotional commitment

Affective commitment has been defined as a holistic judgment of the brand regardless of its functional or instrumental attributes and referring to an emotional feeling that expresses a

customer's psychological closeness to a brand (Amine, 1998). The affective dimension of commitment is related to both an emotional bond as well as a feeling of identification so it seems that brand identification concerns special attention within emotional commitment. Intrinsic motivations (i.e. personal values) and hedonic values (i.e. fun, entertainment, or escapism) may also play an important role for emotional commitment. Carroll and Ahuvia (2006) found that products with mainly hedonic—as opposed to utilitarian—benefits and brands perceived as enhancing and/or reflecting the consumer's social or inner self were associated with stronger brand love. Neuropsychological studies have also found emotional arousal especially within recently formed close brand relationships and association between the activation of the insula—a brain area found to be a crucial mechanism in psychological phenomena such as urging, addiction, loss aversion, and interpersonal love—and established close brand relationships (Reimann et al., 2012). The very interactive experience of engagement relies on important emotional and affective drivers as experienced things, so experiential brands have an important sensory and affective component (Brakus et al., 2009).

Behavioral commitment

As relationship commitment has a behavioral component, behavioral commitment is the willingness to invest personal resources such as time, energy, attention, or money in a brand beyond those resources expended during purchase or consumption of the brand (i.e. consumers can spend money being tattooed with loved brand logo). This willingness to invest personal resources in brand engagement must be analyzed in two different contexts: the individual level and the community level. On the individual level, behavioral commitment can lead consumers to engage in product customization (Nike ID web site) to higher levels of prosumption. Broadly speaking, prosumer (Töffler, 1980; Schembri, 2006) refers to a convergence of the consumer and the producer and involves processes in which consumers "produce" the products and/or services they consume. This is the case with Dell computers as consumers may personalize online the computers they wish to order.

The community level of consumers' behavioral commitment must be analyzed in the brand community framework (Muñiz & O'Guinn, 2001; Algesheimer et al., 2005; Fournier & Lee, 2009; Schau et al., 2009). A crowdsumer is a neologism for crowd-prosumer, referring to those cooperative interactions prosumers have within a brand community. Broadly speaking, crowdsumer refers to cooperative co-creation that can be found mainly in online communities or in wiki-based platforms. For instance, consumers can engage in developing a cooperative brand-based amateur advertisement, a brand-based action like a flash-mob upload to YouTube, or developing free software in a Linux context. Social gratifications achieved through this kind of cooperative interaction (fellowship or sense of community) can help us to better understand drivers underlying crowdsumer behaviors.

Cognitive, affective, and conative responses

Because the brand engagement construct is based on three commitments—rational, emotional, and behavioral, three-types of responses are expected: cognitive responses (brand awareness), affective responses (attitude toward the brand) and conative responses (brand use). Psychological brand processes related to brand engagement do not necessarily occur in a particular order (Schmitt, 2012). For instance, consumers could be driving active conative responses first, such as developing a video that promotes a brand for a branded contest and later develop affective responses as a consequence of this branded interaction. Consumers could develop cognitive

responses that take them directly to conative responses because of the perceived benefit of these actions, such as participating in a branded contest to win a prize without developing affective responses.

A proposed agenda for brand engagement research

The novelty of the construct and its diverse applications to different fields—such as consumer behavior or its context nature—forces research to undertake both conceptual and empirical research. Three main research areas emerge from our framework. First, nomological validity must examine brand engagement's clear boundaries from other related constructs, including the moderating role of related constructs such as involvement or trust on brand engagement formation, or relationships among brand engagement and other emergent marketing constructs such as customer engagement, brand love, and brand experience (whether or not brand experience is an antecedent of brand engagement). Second, applicability of the construct must be analyzed. At a practitioner's level, some metrics of engagement have been developed, but there is still a need for an overall brand engagement scale and further refinements of current metrics that can help marketers to achieve their marketing goals. This scale will provide useful insight into main drivers on each brand engagement dimension and the weight of each dimension to overall brand engagement that guides and maximizes marketers' efforts. Third, brand engagement effects are a clear area for new developments. In this chapter, some relationships between brand engagement and consumer outcomes have been described, but there is a promising area in the potential relationships with other assets like reputation or more tangible outcomes such as firm value.

Validating brand engagement as a marketing construct will lead to an overall brand engagement scale development that will measure consumers' overall brand engagement at a given time to a given brand and its effects on such marketing goals as brand recall, brand recognition, brand salience, brand familiarity (cognition), brand attitude, brand attachment (affect), and brand purchase/repurchase intention or brand choice (conation). Brand engagement valence (engaged/disengaged) and strength (high/low engagement) must be analyzed. A further analysis of brand dimensions will provide knowledge on key drivers to help practitioners identify where marketing efforts are needed. A deeper analysis of brand engagement and related constructs as well as the moderating effects are needed to develop a more comprehensive framework. Possible overlapping constructs must also be detected as contributing to a more developed research area. Special attention must be paid to related constructs such as brand experience (Brakus et al., 2009) and brand love (Batra, Ahuvia, & Bagozzi, 2012). Brand experience has been conceptualized as a marketing construct with four dimensions (intellectual, sensory, affective, and behavioral) that present overlapping interest areas with brand engagement along with possible construct interaction (the role of brand experience in brand engagement formation or the role of brand engagement in perceived brand experience). The brand love construct incorporates seven cognitive, affective, and behavioral core elements—including passion-driven behaviors, self-brand integration, and positive emotional connection—that can also be related to the brand engagement construct. This can lead to possible construct interaction (brand love as a brand engagement outcome). Figure 13.2 depicts these possible interactions and overlapping areas between brand engagement and related constructs.

Brand engagement as a customer engagement process outcome is time- and context-dependent. Analyzing time ("brand engagement antiquity") and context (channel) variables will provide more insight into consumer research and best practices to apply to brand engagement. Knowledge of channel effects could help marketers to improve consumers' engagement and

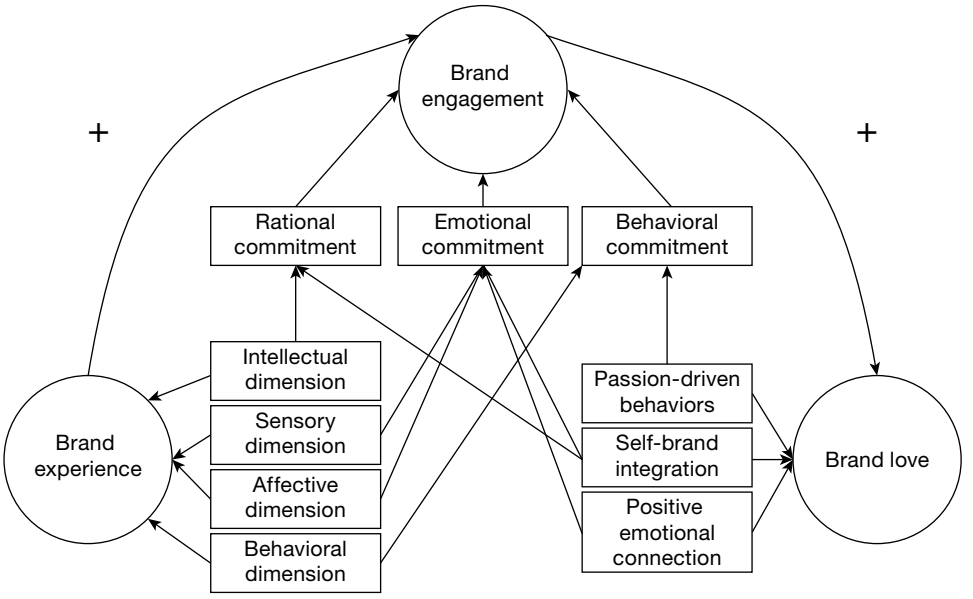

Figure 13.2 Interactions and overlapping between brand engagement and related constructs

could also help clarify time–channel interactions (which channels performed better in maintaining brand engagement over time). In today's multiplatform environment, channels can also be of interest when analyzing different performances of different points of access to the brand for brand engagement (such as a newspaper printed edition versus the digital edition, which can be accessed with a laptop, tablet, or smartphone).

Differences may also arise when consumers engage with fast-moving consumer goods brands versus luxury brands, utilitarian versus hedonic brands, or products versus services brands. Table 13.4 summarizes main research areas and research questions on brand engagement.

Discussion

It seems that technology is changing our world faster than ever. Consumers are evolving as well in a technology-driven marketplace. Within globalization and related processes such as offshoring, brands are a key value for firms to succeed in today's hypercompetitive global markets. But the new online interactive market context demands new ways for brands to interact with consumers. Relationship marketing more than ever seems to be a framework not only for success but for survival in today's markets. New ways to develop and to maintain these relationships are necessary. Customer engagement is emerging as a promising construct that can contribute to starting, developing, and maintaining those relationships, and brand engagement may be a useful construct to measure the customer engagement process health. Brand engagement may help marketers to identify how and why consumers want to interact with their brands and where more marketing efforts are needed to achieve consumer–brand engagement and the expected marketing outcomes (i.e., brand loyalty).

Brand engagement highlights the importance of new consumer–brand interactions, including co-creation value, value sharing, prosumption, and consumer-to-consumer cooperative interactions within brand communities that go beyond traditional relationships in marketing. Such new interactions are leading to a more complex marketing context, including both new

Table 13.4 Main research areas and research questions on brand engagement

Main research areas	*Research questions*
Brand engagement conceptualization	What are the boundaries of brand engagement and related constructs such as brand experience or brand love?
Brand engagement dimensions	What is the contribution of each brand engagement dimension to overall brand engagement formation? How do these dimensions relate (i.e. in a hierarchy model)? What are the antecedents in this dimension's formation?
Brand engagement outcomes	What are the cognitive (recall), affective (attitude), and conative (WOM) outcomes of brand engagement? Does brand engagement improve brand value? Does brand engagement improve brand financial performance? How does brand engagement relate to consumer loyalty? How does brand engagement relate to consumer (re)purchase behavior?
Brand engagement context	What is the impact of the interaction channel in brand engagement development (Is brand engagement channel-dependent)? How does brand engagement develop within different technology/consumer behavior scenarios? How does brand engagement develop over time (Is brand engagement time-dependent)?
Brand engagement and related constructs	How does brand engagement relate to other customer engagement-related constructs? (Is brand experience a brand engagement driver?)

consumer behaviors (consumer empowerment) and brand/organizational behaviors (transparency, access, open brands concept). New questions must be answered: Are we entering a new marketing paradigm? Is engagement marketing a new marketing paradigm?

Further research must assess the mechanisms and relationships described in Figure 13.2, being grounded on existing frameworks. Extending the engagement construct beyond commercial brands is a promising area to build up consistent theory and test validity. Individuals may be engaged in many activities online as well as offline, such as giving time, effort, or money to social causes as a straightforward example of commitment. Thus, a person may have an idea, organization, or a group other than a commercial brand and that reinforces the underlying mechanism of brand engagement.

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14

Branding in the age of digital connectivity

Baskin Yenicioglu and George Christodoulides

Abstract

Rapidly advancing interactive communication technologies and their increasing use by consumers have unprecedented and unavoidable impact on brands and how they should be managed. We argue that the role of brands in the contemporary age of digital connectivity is being elevated and simultaneously shifted. On the one hand, brands have more visibility and power than ever before, yet on the other hand consumers have the ability to easily generate, share, or ignore brand messages limiting brand managers' control over brand meanings. This chapter discusses the digital transformation which connects networks of consumers and companies to each other on a phenomenal scale and explores the impact of this connectivity on brands as well as on branding. First we discuss the mechanisms by which brands play their significant role in contemporary consumer society. Then we introduce what we call the digital age of connectivity and explore its implications for consumers. We follow this with an identification of implications for brands and branding and conclude the chapter by providing practical words of caution for brand managers in their quest to adapt to the age of digital connectivity.

Key words

Branding, consumer behavior, digital communication technologies, interactivity, social media.

Introduction

Brands have historically been the symbolic bearer of differentiation and quality in the human production process of craftworks, commodities, and services (Perry 2003). In contemporary consumer culture theory, brands and branding carry an elevated importance not only as terms, signs and symbols that define certain goods or services but also as symbolic bearers of meanings, emotions, history, and culture. Through this symbolic capacity, brands are increasingly consumed for their non-utilitarian value as they enable consumers to create and manage their personal identities and social relationships (Holt 2004). Advancements in interactive communication

technologies have been increasingly compressing time and space around the globe. In this age of digital connectivity the significance of brands as the sign system for meaning creation in consumers' everyday social lives has also been proliferating (Askegaard 2006). In fact, in this digitally connected world it would be difficult for consumers to avoid brands and their symbolic aura, not only because almost every commodity or service offered by the market is branded, but even counterfeit products feed off brand symbols and anti-branding movements exploit brand names and logos (e.g. the UnSwoosher shoe with its Anti-Logo marketed by Adbusters organization "for kicking corporate ass"). The age of digital connectivity we have been living in for the last decade or so does not diminish this power of brands (as some early writers such as Dussart predicted) but instead levitates it and simultaneously shifts it. Although now brands have the power to be much more pervasive and ubiquitous than before on every possible (digital) channel, brand managers may not even be aware of the discussions around their brands whilst consumers may choose to ignore these conversations altogether. This chapter will discuss the digital revolution that is taking place which connects consumers to companies and brands, but more importantly to other consumers on a phenomenal scale and will explore the impact of this connectivity on brands as well as on branding.

What is this thing we call a brand?

There are many definitions of a brand, from the point of view of different stakeholders. One of the most commonly used in the branding literature is the American Marketing Association's as a "[n]ame, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers." This definition focuses on the function of a brand as a tool of differentiation and identification, however a review of the literature has shown that brand definitions can be organized into fourteen main topics including, brand as: (1) legal instrument; (2) logo; (3) company; (4) shorthand; (5) risk reducer; (6) identity system; (7) image in consumers' minds; (8) value system; (9) personality; (10) relationship; (11) adding value; and (12) evolving entity (de Chernatony and Riley 1998, de Chernatony 2010). Brand is therefore a multidimensional construct that exists in a continuous process of cyclical communication between the actions of the firm and the interpretations and redefinitions of the consumers, through which the brand is imbued with certain values and expectations. Holt (2004) parallels this continuous process of communication as the construction of a brand story. Without this, he maintains, the markers of the brand – names, logos, and designs – are empty and the brand does not really exist. The brand is only fully formed after these markers are filled with ideas and meanings about brand. According to Holt (2004), these ideas and meanings are authored not only by the firm and the consumers but also by the culture industries and various intermediaries such as retailers or pressure groups. Taken together these two views on the brand concept seem to provide the most complex and encompassing definition of the brand as a multidimensional construct that exists in a continuous process of communication and authoring of values, expectations, meanings, and ideas by the firm, consumers, the culture industries, and intermediaries, which fills the otherwise empty markers of the brand with a collection of consumer experiences.

The process of branding has been around since the cavemen first painted the walls in the history of mankind. Some of the oldest paintings in history on the walls of the Lascaux Caves in France date back to 15,000 BC and these bison paintings are marked also by handprints as a form of ownership declaration. The marking of craftwork with seals for ownership and quality claims was a common practice in ancient civilizations. Egyptian, Roman, Greek, and Chinese consumers knew not only who to praise and make repeat purchases from, but also who to blame

if there was a problem with the product (Perry 2003). In 1266, in order to make tax collection easier, England passed the Bakers Marking Law, which required bakers to stamp bread loaves to indicate origin. This was also the time when spirit makers were required by customs and excises to burn their oak barrels of Scotch whisky with a hot iron symbol. These practices were considered to be among the first modern occurrences of commercial branding (Perry 2003). According to Aaker (1991), the term "brand" originates from these practices of using hot iron to burn marks on various goods as well as livestock to identify ownership and declare quality. Historians often pinpoint the Wedgwood & Bentley brand of luxury china in eighteenth century Britain as one of the first successful brand creations during the era of industrialization (Arvidsson 2006). Wedgwood & Bentley, with their catalogues and showrooms that are "designed to convey a sense of shopping experience," seemed to have foreseen the approach of contemporary brand management (Arvidsson 2006, p. 66). After the industrial revolution altered the way of consumption by introducing mass production which made available the products that were once unavailable to the masses, branding became more important as it was the only way for the consumer to differentiate between an ever increasing number of similar products. By the end of the nineteenth century, sellers started to promote their branded products through full page advertisements in newspapers (Strasser 1989). This was the start of the communication between the firm and the consumer. Fast-forward a century and this one-way communication has become a full-fledged orchestra, whereby the authors of brand stories continuously co-create the brand, which became not only a product or service but also a vessel for constructing and maintaining self-identity and social relationships (Smith 2011).

The symbolic meanings of consumption are transferred to brands through the accumulation of brand stories which consumers then use to construct, maintain, and communicate their personal narratives (Schembri, Merrilees & Kristiansen 2010) and to make sense of their relationships in social communities (Hirschman 2010). Brands loaded with brand stories and with their identity values have become the essential vessel of self-expression for their consumers. They have also become equally important for companies through a pressing need to thrive on the basis of stories and myths co-narrated together with consumers as products are becoming less important than their stories (Smith 2011).

The presence and importance of brands as a cultural and social institution has never been greater than it is in today's globalized world, where digital connectivity allows for a 360° conversational space for consumers (Smith 2011). Brands, and their symbolic and cultural narratives, have now become one of the most significant and powerful ideoscapes and mediascapes of the world in the globalization process with their meaning creation and dissemination role (Cayla and Arnould 2008; Askegaard 2006). Traditionally, the power to create and disseminate meaning through brands was only granted to the forces of the market. The brand manager was deemed to be the sole controller of the brand story developing and delivering brand messages on a one-way street to unsuspecting passive consumers. Even the very limited consumer agency was labeled as market sanctioned cultural experiments by which the branding paradigm would seize these creative opportunities to rejuvenate itself (Holt 2004). However the advancement of interactive communication technologies, which were once seen as the ultimate tool for the brand manager to exploit the power of the brands even more, has now backfired, rendering the consumer more powerful than ever. The lived experiences and meaning creation moments of consumers on an everyday basis can now be communicated and shared with fellow consumers around the globe and these co-created stories can easily influence brands and their stories on a global scale. Within the age of digital connectivity, brands still retain their power to influence consumers' personal identities and social relationships, yet the power to create and disseminate these brand stories lies increasingly in the hands of consumers.

The digital age is upon us

Only a few years ago researchers from McKinsey, based on a study of 20,000 customers from various industries across the globe, demonstrated that the customer's decision journey has shifted phenomenally from the traditional passive and linear steps to a collaborative continuous process where one-way push marketing no longer prevails (Court et al. 2009). The real digital revolution has occurred as interactive communication technologies helped Web 1.0 evolve into what was termed Web 2.0 and as consumers started to flock to social media platforms to collaborate, cooperate, communicate, and co-create with each other at a phenomenal rate.

Web 2.0 as a term was first coined in 2004 by O'Reilly to describe the new way in which World Wide Web was used as a platform where content and applications are not only created and published by individuals but are also modified and shared by networks of users in a participatory and collaborative fashion (Kaplan and Haenlein 2010). O'Reilly coined the term Web 2.0 and defined it as "a set of economic, social, and technology trends that collectively form the basis for the next generation of the Internet – a more mature, distinctive medium characterized by user participation, openness, and network effects" (Musser and O'Reilly, 2006, p. 4). However, since O'Reilly, there have been numerous attempts to define Web 2.0 and there is still a lack of consensus over what the term identifies. Most of these definitions however, only describe the symptoms of Web 2.0 and do not incorporate its underlying philosophy. The overarching use of the term and the lack of an accepted and agreed upon definition resulted in an analysis of Web 2.0 that misses the details of cultures, contents, agendas, and infrastructures of different participants, leading to an oversimplified understanding of its use, meaning, and value for its participants (Beer 2008). What is more, some academics and practitioners alike have even moved to an era of Web 3.0 and to the mobile social web and the advancements in interactive communication technologies do not hint at slowing down. Therefore, rather than attempting to define what we will call the social web, we will explore its meaning and value in use for its participants as they create and co-create brand meanings in the digitally connected world.

If the social web is the new ideological and technological ways in which the World Wide Web is now being utilized by networks of users, then social media can be defined as the group of Internet-based applications that build on the foundations of the social web and that allow the creation and exchange of user generated content (Kaplan and Haenlein 2010). These open source and interactive applications are aimed at expanding the experiences, knowledge, and market power of the users as participants in business and social processes, by allowing generation, dissemination, and sharing of content (Constantinides and Fountain 2008). Social media applications encompass a range of channels including forums such as blogs, consumer rating/review websites, social networking websites, content sharing sites, virtual worlds, business networking sites, and collaborative sites. In the midst of all this variety of tools, sometimes the "media" aspect of social media is heralded as having an overrated importance (Drury 2008), yet it is the "social" side of social media that makes it unique and valuable to both consumers and businesses alike.

Today, over 1.2 billion people worldwide, 85% of the world's Internet population over the age of 15, log on to social media platforms (ComScore 2011). According to eMarketer (2012) there will be 1.43 billion social network users by the end of 2012, which amounts to a staggering 19.2% increase over 2011. The increase in Smartphone adoption has pushed the number of mobile social media users to 650 million in 2011 and this number is expected to grow to 1.6 billion in the next 5 years (Juniper Research 2011). This uptake of social media by consumers opens up new challenges as well as vast opportunities for industry and marketers. Developments in mobile technology enable social media access to be anywhere and at any time, making the

efforts of brand managers to keep up even more important. Social media enables brand managers to reach and interact with consumers with relatively less cost and more impact than traditional media channels. However, it also poses serious threats by taking the control over the creation and dissemination of brand messages away from managers. In this Networked Information Economy (Benkler 2006) brand messages no longer flow from a multitude of fragmented marketing communication channels towards the consumer; they are rather communicated every way through an integrated network of online and offline touch points, which are largely outside the brand manager's control (Mulhern 2009). Communities of networked consumers as well as commercial and non-commercial organizations accelerate the collaborative and co-creative processes throughout the consumer journey. On the one hand, this networked economy redistributes the power of control over content to the consumers, and, on the other hand, it fragments the notion of common knowledge over brand meanings. These concepts are discussed in the following sections.

Implications for consumers

The architecture of the internet has changed from a collection of interconnected documents to a web of interwoven relationships. Consumers are now more connected to one another than ever before. Mobile phone penetration is over 100% in the US and Western Europe with the majority of handsets being perpetually connected to the internet. In this context, consumers are not only the chief content distributors of brand messages but also the chief creators of brand related content (Christodoulides and Jevons 2011; Christodoulides, Jevons and Bonhomme 2012) while the influence of social media in the consumer decision making process is undeniable.

The aforementioned developments have significantly affected consumers' expectations about how to interact, experience, and resonate with brands (Christodoulides 2009). The expectation is now for a more intimate relationship similar to the relationships consumers form with corner shop owners and friends. Consumers thus expect brands to exhibit honesty, authenticity, transparency, openness, and other features that we seek in individuals. Brands need to be more human and more accessible (Vaynerchuk 2011). Consumers will be more likely to resonate with brands that offer more transparency and admit their mistakes. Consumers do not want to be "talked to" any more. They want to interact, converse, buy, and consume brands that care about them.

The opportunity for marketers does not lie in simply changing a company's media or communications strategy. A different mindset is required to build successful brands in this digital era. Brands that do not have a social DNA will struggle to successfully deploy social media and reap the benefits of social currency. The challenge for marketers is to *create brands that offer a storyline rather than a full-fledged script, allowing consumers, both individually and collectively within communities, to interpret and construct their own brand meaning.* Building inspiring yet malleable brands empowers consumers to use brands as vehicles to expressing and communicating their own personal stories.

Allowing consumers to imbue brands with their own meaning does not preclude the development of shared brand meaning and/or brand knowledge. Whilst brand meaning was traditionally shared by large social and cultural communities often created at the segment level, brands are now construed by smaller, more fragmented, often ephemeral communities. This means that brand knowledge *per se*, which is specific to members of these communities is also more transient and varied.

According to Levy (1997) "no one knows everything, everyone knows something, all knowledge resides in humanity" (Levy 1997). This collective intelligence can no longer be ignored

by marketers. Advances in communication technologies thankfully helped digitize consumer research as well, providing opportunities for researchers to tap into this collective intelligence easily. Researchers can now use new online research techniques, collect data from previously inaccessible but valuable respondents, and achieve comprehensive sets of big and rich data not to mention more efficient and reliable ways to analyze it (Johnson 2001). The digital approach to consumer research fundamentally changes the way consumer related knowledge is being generated and disseminated within the research community (Johnson 2001), whilst also empowering consumers who were previously regarded as passive participants in the research process (Cooke and Buckley 2008). Empowered as they now are, consumers – more than ever before – demand to be consulted. In 2010 Gap™ unveiled a new logo for its brand, but this was soon abandoned following a torrent of criticism from Facebook™ and Twitter™ users. Smart brand marketers are those who hold their (big) ideas in an open hand allowing them to be picked up by consumers and be developed into great ideas (Merchant 2012). Recognizing the importance of crowdsourcing, a number of brands have moved away from a traditional "command and control" approach to encouraging the creation and dissemination of user generated content (Christodoulides and Jevons 2011). Coca-Cola™ has recently released a video openly communicating its advertising strategy until 2020, emphasizing the shift from creative excellence to content excellence. This involves moving away from relying on traditional ad agencies for creative ideas to embracing a collaborative approach to content creation and storytelling (Baker 2011).

The influence of reference or membership groups in consumer behavior, particularly in relation to conspicuous consumption, is well established in consumer research (e.g. Childers and Rao 1992). On the other hand, privately consumed products that are less conspicuous are less likely to be purchased with a reference group in mind. What is an interesting development is that now with social media and fast growing visual platforms such as Pinterest™ and Instagram™ products traditionally used or consumed in private are now publicly shared (e.g. underwear, holidays). In this context consumers increasingly accept/seek comments from other consumers (friends/acquaintances/contacts) on brands they have bought or are considering to buy. Potentially all consumption is now conspicuous consumption depending on how consumers utilize social media.

Contrary to the brand funnel which assumes that consumers systematically narrow down their choices until they make a purchase, research by McKinsey has shown that today's consumers add and subtract brands from their consideration set over an extended evaluation phase (Court et al. 2009; Edelman 2010). Following their purchase, consumers often engage in an open-ended relationship with the brand, sharing their experience with it online. Digital media make the "evaluate" and "advocate" stages of this consumer journey increasingly important (Court et al. 2009). Paradoxically and despite overwhelming evidence suggesting that word-of-mouth/mouse-recommendation is consumers' most trusted source of information (Nielsen 2012) as well as their strongest influence to buy, up to 90% of marketing spending still goes to advertising and retail promotions (Edelman 2010). Managers of strong brands appreciate the influence of consumer-driven marketing and invest in helping consumers navigate the evaluation process and generate positive advocacy for their brands. This process often involves accessing and mobilizing key influencers which are identified in the literature as connectors, mavens and salesmen (Gladwell 2000).

Implications for brand and branding

As we move forward, "social" is expected to become an important constituent dimension for a number of brands. In a previous paper on internet branding we argued that a brand is a brand

regardless of its context and that it is a cluster of rational and emotional values that promise a certain type of experience (de Chernatony and Christodoulides 2004). We herein propose that in light of the increasing importance of social value in the age of digital connectivity the definition of a brand is augmented as a cluster of functional, emotional *and social value*. This does not mean that all brands need to deliver all three types of value to consumers. This is a decision that depends largely on a brand's value proposition and positioning. Figure 14.1 shows how a brand such as Facebook™ arguably lies at the intersection of all three with functional (facilitates communication), emotional (allows self-expression and self-presentation), and social value (keeps you connected with your friends).

As discussed above the process of branding was traditionally about creating a rigid brand identity and communicating this to target consumers who were regarded as passive recipients of the intended image. In the age of connectivity branding is a collaborative exercise whereby the values of the brand as well as brand equity are co-constructed between managers and consumers/communities in a dialectical rather than unilateral process (Christodoulides et al. 2006). A brand is akin to an evolving story; not an unchanging gospel. Today's successful branding is not about reciting a story; it is rather about being a participant in the storytelling. Strong brands in the age of digital connectivity will have open architectures that not only allow but in fact encourage active consumer participation (Satell 2012).

With few exceptions (e.g. Berry 2000; Christodoulides et al. 2006), brand equity conceptualizations and/or measures are predominantly sender-oriented, focusing on brand managers' activities as sources of brand equity. Under this paradigm brand managers are regarded as "cultural engineers" who have the power to make consumers behave in ways intended by brand owners (Holt 2002). This neglects consumers' creation of brand meaning through everyday consumption. When thinking about brand equity, brand managers need to recognize the active role of consumers in co-constructing and sharing brand meanings with various stakeholders (including with other consumers). As consumers become more empowered, one-sided conceptualizations of brand equity become less appropriate, especially in the democratic context of the internet where brands become "smart" by learning and evolving with consumers. Berry (2000) identifies two constituent dimensions of brand equity: brand awareness and brand meaning. Whist marketers are still largely responsible for driving "share of mind" – a prerequisite

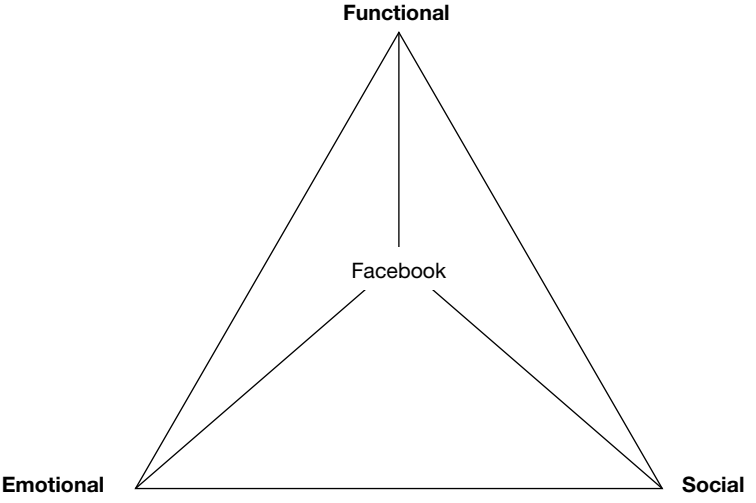

Figure 14.1 Three-dimensional branding

for a consumer to buy a brand – we have also seen that unknown brands may also be included in the consideration set during the "evaluate" stage of the consumer journey if recommended by others. The control traditionally held by marketers over brand meaning belongs to the past; brand meaning is now created through multiple conversations and managers are now only one party in these conversations. A key challenge for brand managers is to socialize traditional media touch points and integrate them with new media touch points in ways that meaningfully and consistently connect consumers to the brand.

Before the advent of the social web, we argued there were three main strategies that brands should follow in the digital space, i.e. building genuine relationships, offering better tailored offerings and allowing greater interactivity (de Chernatony and Christodoulides 2004). In today's world of digital connectivity these strategies remain important, however the tools required to implement the strategies may be different from those available in the e-commerce era. Building genuine relationships now involves a series of consistent customer experiences and interactions on various platforms on and offline. These interactions are not between individual customers and the brand but also between the brand and various communities. Presenting better tailored offerings encompasses the creation of malleable brands and products whose final form may be defined by consumers. Crowdsourcing is a method by which wired consumers are involved in the development of different aspects of a brand's marketing mix (e.g. communication) resulting in higher levels of relevance and consumer satisfaction. Greater consumer brand interactivity facilitated by social media now a key channel for brands to engage with consumers. KLM™ offers 24/7 service on Twitter and Facebook and promises to respond to customers' queries within an hour.

Key lessons for brand managers

In the previous section we have shown how the traditional views on brands and branding such as the command and control approach can no longer aid brand managers in their quest for *building* strong brands. In today's digital age of connectedness, brand meanings do not only flow unidirectionally from brand managers to consumers but are also created through various interactions between a network (or networks even) of multiple agents. Brands are no longer *built* by managers but they are rather *crafted* through these interactions and take shape and reshape continuously. This section will provide insights into the new craft of brand management in order for brands to be successful in this uncharted and rapidly advancing digital era.

This is an era of collabranding

The most valuable resource for brand managers today in the digitally connected marketplace is the willing, creative, inspired, and inspirational global know-how of consumers. Earlier, we have demonstrated the importance of the collective intelligence of consumers for the brand manager. This collective intelligence, which is made readily accessible in the age of digital connectedness, should be harnessed by today's smart brand manager (Christodoulides and Jevons 2011). Brand managers should not ignore the vast innovative potential of this open resource. The collective intelligence is inspired by a vast number of consumers having continual experiences with brands accumulated over a long period of time and as such it should also be inspiring for brand managers as they try to craft their brands. This is what we call the era of *collabranding,* where successful brand managers craft social and interactive brands in collaboration with the collective intelligence of their consumers. Collabranding is about co-creating brand related content that is often experimental, experiential, and relevant together with consumers by tapping into their collective intelligence in the digital age of connectedness. This is a new,

demand-based, pull branding where collabranding managers should not market *to* but rather socialize and interact *with* the collective intelligence in order for the consumers to be willing, creative, and inspired about their brands.

Be there or be square

As discussed above, consumers are increasingly using a multitude of different channels through their purchase journey and they expect brands to be present wherever they are and whenever they are. This is an era of connectedness and in order to succeed in the new craft of demand-based collabranding brand managers should be able to identify and integrate the key on and offline touch points where they can interact with consumers. According to a recent survey on consumer perceptions of retail channels, 54% of consumers regularly employ two or more channels before they make a purchase. And even during purchase consumers expect an integration of multiple touch points. Although the store is still the preferred medium for purchase, if the items are not in, 51% of consumers expect a store associate to find an out-of-stock item online and have it shipped. Furthermore, 35% of those surveyed said they expected to be able to redeem the same coupons and offers both online and in stores; 30% said they expected to be able to return or exchange products in any channel regardless of where they bought them; and 22% said they expected to be able to access their online shopping cart, past purchases, wish list, loyalty points, and status of orders no matter where they shopped (Oracle 2011). Consumers not only require multiple channels when they make their purchases but also like to engage with other consumers as they shop. As we have noted before, recommendations from friends and family are the most trusted source of brand information for consumers around the world, above all other forms of advertising (Nielsen 2012). It is therefore fundamentally important for brand managers to facilitate cross-platform shopping as well as peer-to-peer interaction by ensuring logistics and systems compatibility. Levi's™ for example, integrates its online store with Facebook™, allowing customers to browse through the products their friends had "liked," interact with them and create a collaborative shopping experience. Facebook™'s Instant Personalization extends this level of integration and enables users to have content their friends have liked or recommended highlighted on partner websites. Macy's™ in New York provides augmented reality mirrors in their changing rooms for consumers to virtually try on clothes, share how they look with their friends and get their feedback details in real-time.

Learn or burn

Being present at the multitude of these integrated touch points is not enough for brands to succeed in the age of digital connectivity. A passive existence may even be more detrimental for brands than an absence at a given touch point. Collabranding necessitates brand managers listening closely to the collective intelligence of their consumers and learning from these interactions not only between the brand and the consumers but also among consumers themselves. Listening can only be efficient and effective if clear and specific protocols and systems exist about what and who to listen to, and how. Brand managers can only learn from what they hear if these interactions are analyzed properly, which makes it necessary to integrate appropriate quantitative and qualitative analytical tools into the collabranding process. Lessons learnt should be internalized throughout the organization with the role of the brand manager now involving coordinating the dissemination of knowledge generated through customer connections. A true learning organization will also respond to the knowledge generated and disseminated throughout the organization in a timely and appropriate manner in order to close

the collabranding loop. Dell™'s social media listening command center is a prime example of how brands can listen and learn from their consumers. The Centre, which was established in 2010, is now listening to their consumers in eleven different languages and aims to respond to the 25,000 comments, critiques, suggestions they post online daily in the space of four hours.

Be flexible and be faster

The need to learn from and respond to the collective intelligence of digitally connected consumers may present organizations with structural and procedural challenges. Collabranding managers should decentralize responsibility to allow their brands to learn and respond effectively in a timely manner. As we discussed above, digitally connected consumers are impatient and would like to act (and share) whenever they want, wherever they want throughout their consumer journey. Some of the responsibility for listening to the conversations around the brand, the routine analysis of this chatter, and an appropriate response to it should be deployed to the employees at the touch points there and then at the time of interactions. There should be clear and comprehensive procedures explaining the roles and expectations across the organization. The organization itself should be digitally connected to avoid any inconsistencies as the brand collaborates with the outside world. This flexible and fast response to consumer experiences is a great source of competitive advantage especially in the fast moving fashion industry. For example, Zara™, the Spanish retail chain, achieves this by equipping store managers with handheld devices which link them directly to its design department at headquarters. Customer feedback and preferences therefore are analyzed daily and the brand can adjust to changing customer tastes very quickly. The eruption of the Icelandic volcano, Eyjafjallajökull, in April 2010 resulted in air traffic across Europe coming to a standstill for six days, during which KLM™ experienced a staggering number of customer queries jamming their call centers. So KLM™ turned to social media and their efforts on Facebook and Twitter received a lot of positive publicity which resulted in a decision to heavily invest in an ongoing social media strategy. As a result KLM™ established a company-wide social customer service policy that involves a front line social media management team and the cooperation of multiple departments.

Freshen up

We have identified another key element of collabranding as being relevant to the changing needs and wants of the digitally connected consumers in today's increasingly agile marketplace. Brands need to be relevant to keep the collective intelligence engaged so that they keep on collaborating to create and share content around the brand. The attention span of consumers today is getting shorter and shorter and they are more willing to try out new products and services but can also abandon them as easily as they try them out. Collabranding managers can keep consumers' interest at a high if they can keep the brand fresh by always being innovative with the ways they interact with consumers. We call this constant strive to be fresh and innovative the *brand-new branding* philosophy, without which a long-term sustainable collabranding effort would be futile. Muji™, the Japanese clothing and furniture retailer, pursues innovative ideas from online social communities, where its half a million member customers regularly evaluate and rank new designs. Professional designers then develop production-grade specifications for manufacturing the shortlisted new ideas. Other companies, such as Starbucks™, use open innovation platforms to generate ideas from their consumers. Through its My Starbucks Idea platform, the coffee chain has developed many new products and services, including its mobile app payments and its instant coffee brand VIA™ Ready Brew and eGifting.

Be exclusive to the masses

As we mentioned above, collabranding needs to be experiential and provide customers with opportunities for personal involvement, competencies, and sentiments. Whilst exclusivity used to be the key to being a strong brand for the individualized consumer, for the collective intelligence of the digitally connected consumer, collabranding should be *massclusive*. The digital era allows the collabranding manager to craft brands that provide individualized experiences to a multitude of consumers. Not only can consumers now enjoy the feeling of personal and personalized experiences through their brands, but also they can share these exclusive experiences with their collabranding partners. Massclusive branding provides consumers with the feeling of standing apart from the masses whilst at the same time letting them be a part of an "exclusive" club on a daily basis. American Express™ membership will get the consumers into VIP lounges at airports, provide them with car and concierge service in international cities, offer them pre-booking in popular shows and concerts and even book them tables in hard to get restaurants. Luis Vuitton™ consumers will get personalized invites to members-only launch events, special viewing of art shows in galleries and museums.

Embrace failure

We identified above the element of experimentation required for collabranding to be sustainable and relevant for the ongoing interactions between the brand and consumers. Experimentation is also an integral part of brand-new branding where there is a continuous striving for remaining relevant and producing engaging content. However, collabranding managers should appreciate and embrace the fact that experimentation is inherently failure prone. Being risk averse can leave the brand stale and keep the collective intelligence away. Collabranding managers should therefore encourage and reward accordingly in order to craft an experimental brand in the digitally connected era. Collabranding tolerates brands to be *flawsome* in their attempts to engage and interact with consumers. Being flawsome is not only about encouraging and embracing experimentation by the brand but also about acknowledging and accepting that brands can make mistakes and taking ownership of these mistakes. Brand experiences can sometimes be unpleasant and the digitally connected consumers have the ability to talk about and share all their experiences. Denying or fighting against these conversations can be detrimental for brands. Alternatively, acknowledging these mishaps and addressing them in a constructive and communicative manner would humanize brands and establish them as more credible collaborating partners for consumers. Accepting the fact that brands should be flawsome, Domino's™ hired a huge billboard in New York's Times Square and live streamed good and bad customer feedback posted on their Twitter for a month. FedEx™, after a video of one their employees throwing a customer's monitor over a wall had been viewed over 3,000,000 times in 48 hours on YouTube™, apologized to their customers with a blog post entitled Absolutely, Positively, Unacceptable and noted that the video is now being used in training of their employees on what not to do. Innocent Drinks™ in the UK, after sending out a Christmas email with a faulty voucher, sent out an apology and a working voucher with a note to invite consumers to keep the faulty voucher "as a memento of our stupidity."

What skills are required for today's brand managers?

Throughout the chapter we have argued that the power that traditionally rested with the manager is shifting towards consumer networks. This does not mean that the role of the brand

manager is contracting; on the contrary, the new brand manager now has to manage a much more complex set of relationships both internally and externally. As we have noted above, in order to co-craft the brand with the collective intelligence of consumer networks, organizations need to evolve and be more flexible with decentralized responsibilities towards the frontline touch points. Together with the organization, the new brand manager as well needs to evolve and integrate an internal and an external role.

Internally the brand manager should be the *Kapellmeister* (the conductor) of the organization as he/she strives to craft brand experiences together with the digitally connected consumers. As we discussed throughout this chapter, there are multiple on and offline touch points where the brand now interacts with the collective intelligence, and by which the brand stories are crafted. If there is no consistency amongst these touch points then the brand stories would become a cacophony for the consumers and the brand can easily lose its collaborating partner. The multitude of interactions between the brand and the consumer should be integrated so that what the brand communicates with the consumers, how it communicates with them, where, and when can be in harmony. The new collabranding manager, in this sense, has the responsibility to bring together all the internal touch points, set the tone of voice for all the different brand interactions with the outside world, prepare and communicate clear and specific procedures for brand interactions, and attend and frame the composition of brand stories from an internal point of view.

Yet, we now know that brand stories are not only *composed* internally but are rather *crafted* through collaboration with the collective intelligence of consumers. Therefore, the second and equally important role for the new collabranding manager is externally focused. We defined collabranding as always and already being experimental, experiential, and relevant for consumers. In order to establish and manage these crucial characteristics, the new brand manager has three different but integrated external roles. First of all, the new brand manager should be an *intelligence officer* by acting as the channel through which consumer insight is brought into the organization (Edelman 2010). Only by continuously searching for and feeding in uncharted information about the consumer, as well as distilling and synthesizing this information into strategic innovations can managers keep the brand new, fresh, and experimental. This information officer role is therefore crucial for what we call the brand-new branding approach and moreover for managing what we have identified as the flawsome brand. In their capacity as information officers, brand managers should have the overall responsibility to monitor the negative experiences of consumers, evaluate their impact, and respond to them accordingly at a strategic level.

This first new role for the brand manager is an outside-in role bringing timely and relevant information about the collective intelligence of the consumer into the organization. The second new role involves an inside-out approach where the brand manager becomes an *editor* and *publisher* of content. In order to provide consumer networks with the brand experiences they seek, the brand manager has to surround the brand with content. Through this content the collective intelligence will interact and collaborate with the brand to craft brand stories. The new brand manager should be able to create as well as collate interesting and inspiring content which would bring the consumer into the realm of the brand at every stage of their consumer journey. This external role is again inseparably linked to the internal role of conducting as the content should not only be engaging but also consistent amongst the multitude of integrated on and offline communication channels so that consumers would have seamless experiences with the brand through their consumer journey.

The final and probably most challenging and yet important new role for the brand manager involves distancing away from the brand by being an authentic, and trustworthy *collaborator* with

the collective intelligence of consumers. The collaborator role requires the brand manager to be empathetic to the constantly changing needs and wants of consumers in order for the brand to stay relevant for the collective intelligence. In the era of digital connectivity, where the ways in which to connect and collaborate with the collective intelligence are in a constant state of flux, the new brand manager also has to evolve and adapt. In order to be a true collaborator, the brand manager has to go out of his/her comfort zone and take a step away from the business as usual to challenge the accepted branding practices in the company by stepping into the shoes of consumers.

In spite of all the changes happening in the brandsphere and the new fascinations the digital era presents to consumers along their decision journeys, the core of what the brand manager does is largely the same. The name of the game is still about establishing strong brand equity. However, the way brand managers go about developing brand equity has changed, with the sources of brand equity being increasingly co-created by other consumers through a collaborative effort we have identified above as collabranding. In the era of digital connectivity managers need to consider and enact not only the functional and emotional value of their brands but also the social value thereof. In order to achieve a sustainable brand equity, brand managers need to orchestrate collabranding activities within the company; bridge the information gap between the company and the collective intelligence; collect, create, and publish relevant and engaging content around the brand; and collaborate with consumers in an authentic and honest manner to co-narrate brand stories. Otherwise, there is a caveat that single (i.e. company) authored brand stories will stop resonating with the collective intelligence and the brand will eventually lose its role in meaning creation leading to the brand's ultimate demise.

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15

The future of pricing in the digital era

P. K. Kannan

Abstract

Recent advances in information and digital technology are creating significant opportunities and tools for the firm to implement innovative pricing strategies, while at the same time presenting many challenges to the success of their existing strategies. In this chapter, these developments and emerging trends in digital technology are outlined and analyzed with respect to how they create opportunities and challenges for a firm in the realm of pricing. Based on this analysis, research directions on pricing in the digital era are discussed with a specific focus on (1) how firms ought to orient themselves to better prepare for these changes, and (2) what the implications are for consumer behavior in this evolving environment.

Key words

Pricing, dynamic pricing, mobile pricing, freemium, digital products, digital services, customization, "Showroom"ing.

Introduction

Pricing is one of the most critical marketing strategies for a firm, as it plays an important role in extracting the return for the value the firm creates for its customers. Recent advances in information and digital technology are creating significant opportunities and tools for the firm to implement innovative pricing strategies, while at the same time presenting many challenges to the success of their existing strategies. The purpose of this chapter is to outline these developments and emerging trends in digital technology and analyze how they create opportunities and challenges for a firm in the realm of pricing. Based on this analysis, I derive research directions on pricing in the digital era with a specific focus on (1) how firms ought to orient themselves to better prepare for these changes, and (2) what the implications are for consumer behavior in this new environment. The chapter is organized as follows:

- In the next section, I present the basic framework for pricing based on value pricing concepts, which highlights how a firm can price their products/services based on a clear recognition of the value they create for different customer segments. I also discuss how they can create value for customers using dimensions other than just the product and service designs, which can increase the value perception of their offerings.
- In the following section, I highlight the observed pricing trends facilitated by IT and digital development and the implications for value creation for customers and value extraction for firms.
- In the final section, I discuss the implications of these trends for the future of pricing and pricing research with a focus on understanding firm strategies to better cope with these trends and the implications for consumer behavior in this evolving environment.

A framework for pricing

A framework for pricing that has been firmly established as the basis for understanding the perception of the total value created for customers, and the extent to which this value can be extracted by the firm using their pricing, is the framework of *value-based* pricing (Nagle, Hogan and Zale 2010). In this framework, value is defined on the basis of the price of the next best competitive alternative, which is the best substitute for a firm's offering. If the firm's offering is totally undifferentiated from this competitive offering, then this is the maximum level at which the firm can price their offering (see Figure 15.1). However, to the extent that the firm's offering is differentiated from this next best alternative (in terms of features and attributes of the product or the services that add value to customers – real and/or perceived), it creates a positive differentiation value for the firm's offering. On the other hand, the competitive alternative may possess features and attributes that the firm's offering does not have, which creates a negative differentiation for the firm's offering and cuts into the positive differentiation value. Thus, the total economic value of the firm's offering is determined as Price of the Next Best Alternative + Positive Differentiation Value – Negative Differentiation Value. This is the ceiling for the price that the firm can charge for their offering. If the cost for producing the offering is much lower than this total economic value, then the firm can obtain a significant margin.

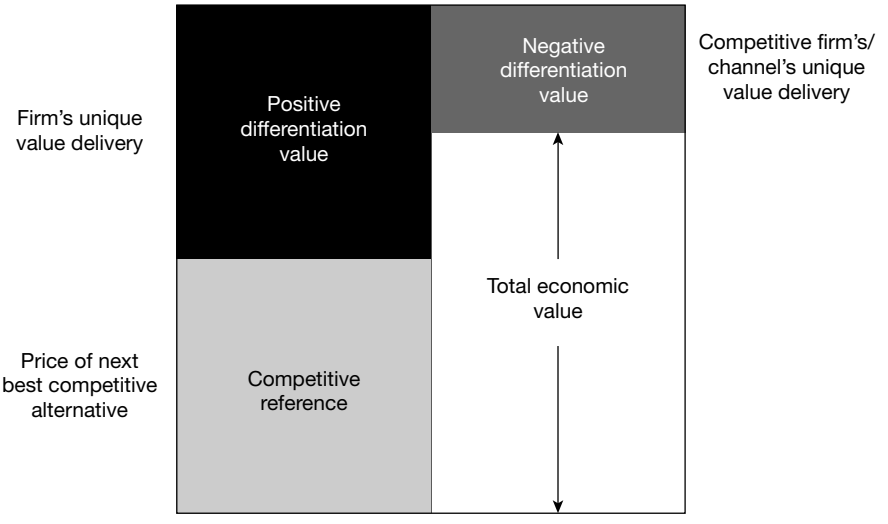

Figure 15.1 Value based pricing

The actual price charged will obviously depend on the extent to which the firm wants to extract this total economic value, which, in turn, depends on the market size, distribution of the customers' willingness to pay, their price sensitivities, and so on. In fact, the heterogeneity in these values can lead the firm to offer a menu of offerings at different prices tailored to different segments.

It is important to note, especially in order to understand the impact of information and digital technologies on pricing, that the positive and negative differentiation values need not arise just from the offerings per se – that is, these values are functions of more than the features and attributes inherent in the firm's and competitors' products or services. Rather, there are other dimensions associated with the channel, through which the offering is made available or the brand associated with the offering all of which can create differentiation values. This is illustrated in Figure 15.2.

Figure 15.2 highlights the costs that consumers incur in making a purchase of the competitive offerings. For illustrative purposes, assume that a firm (Us) offers its product (say, footwear) through the online channel competing against a competitor (Them) offering their products through a traditional bricks-and-mortar channel. The online firm can carry a wider assortment and help customers get their ideal footwear (in terms of the price, size, fashion, color, features, etc.) through a search function, which reduces the cost of searching for the best fit, and thus creates positive differential value for the firm's offering as compared to the competition. However, the offline competitor, in the bricks-and-mortar channel, can reduce the customer's risk of not getting the correctly fitting footwear by having the customers try on the shoes at their store before purchasing. For some customers this may create value. Similarly, the online firm can create positive differentiation value through free shipping, no sales tax, and other such reduced costs, which may increase the total economic value for its offerings. That is, they can charge a higher price as compared to the competition due to this positive differentiation value.

The above illustration highlights how technology developments can have an impact on the costs of customers by creating positive/negative differential values for firms. Having a good search function within an online store can reduce the costs of identifying a customer's best fit. The same search function at a search engine can enable customers to shop across different firms, so that the value proposition of each firm's offering becomes very transparent, especially the price of the offerings. This could lead to competition based on price if the offerings are not well differentiated, creating pressure to lower prices. Such differentiation can be made, for example, through branding, thereby reducing the risk cost vis-à-vis competition on the dimensions of

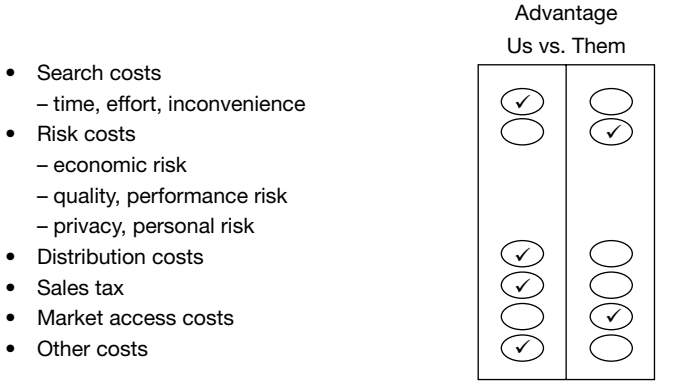

Figure 15.2 Differentiation based on customer costs

performance and quality. It is also important to note that customers are heterogeneous with respect to each of these cost dimensions. Some have low value for time, and hence search costs may be very low for them. These customers may spend time and effort in searching for a lower price. On the other hand there could be customers who value time and effort much more and may not invest too much time price shopping. Some customers may have higher-risk costs as compared to others for the same product or offering. Some customers may seek branded products and services to reduce their perceived risks, and they may be willing to pay a premium price for this risk reduction.

Thus, the value-based pricing framework, as explained in the preceding paragraphs, is useful to understand the different dimensions of value that different customers perceive, with respect to the different competitive offerings in the marketplace. It provides estimates of the total economic value of a firm's offering for different segments of customers; it also provides guidelines as to what dimensions of value can be changed in order to increase different segments' willingness to pay for a firm's offering. This provides the basis for a sound pricing strategy. It also provides a clear foundation for understanding the impact of technological and digital trends on pricing, which is discussed in the next section.

Trends and their impact on pricing

I will discuss the technological developments and their trends in broad categories such as search technology, mobile technology, revenue management and dynamic pricing technology, customization technology, and technology developments in the digital products and services domain, and then I will discuss the implications of these developments for pricing.

Search technology

Developments in search technology – search engines, price comparison engines and online intermediaries (e.g., Kayak, Travelocity, Expedia) – are providing decision aid platforms to customers to compare alternatives and make their choices of products and services. For example, in the realm of travel services, Kayak is fast becoming an "integral part of travel planning as it enables travelers to refine searches, compare destinations and view real-time pricing" (Forbes 2012). Commodity services categories and retail services of branded products, where price tends to be the most salient factor in a customer's decision, are being significantly affected by such search developments. Increased price competition in these undifferentiated markets is pressuring profit margins for firms, while customers benefit through lower prices. This trend is likely to continue, and less savvy and high-cost firms and retailers will be forced to exit their markets.

The wide penetration of mobile technology has also hastened the impact of search technology. Provision of "apps" by online retailers (e.g., Amazon) which provide information on prices on thousands of SKUs that they carry enables customers who shop at offline retail stores to try out and experience the product at these offline stores and then check prices online and order these products online. This mobile-enabled trend, known as "showrooming," has put a lot of pressure on the offline retailer, who generally must keep a fairly large inventory of their products and has higher overhead costs, as customers use their stores as showrooms, but order their products from online competitors. The search process has become ubiquitous and omnipresent with mobile technology, and it significantly impacts retail service pricing and profitability.

In order to combat this relatively new trend of "showrooming," offline retailers have resorted to many strategies, especially during the holiday season where lost sales due to showrooming could be significant. The first strategy is to match the online price so as to try and prevent sales

to customers ordering online. Some offline retailers have provided free Wi-Fi, so that customers can simply order from the online channel of the offline retailers while in the store. Some stores help customers avoid long lines by allowing them to scan products with their mobile devices and have them shipped later. Some of the stores even provided same-day delivery of such items. All these newer tactics help retailers to offset the negative differentiation value vis-à-vis their online competitors, in an effort to retain the business from the customers within the stores (Shropshire 2012). Many retailers have made these strategies permanent, to extend beyond the holiday season, so that the impact of showrooming on sales is minimized.

The short-term impact of showrooming is to reduce overall offline/bricks-and-mortar prices of retail products to the online price levels through price matching. However, in the long term, such technological developments decrease the search cost of all customers significantly, thus sensitizing more customers to price and making them price-conscious. Consider, for example, an offline retailer whose customer base consists of 25% price sensitive customers and the rest price insensitive. If search and mobile search technologies affect only the price sensitive segments then the impact is somewhat limited. However, these technologies are so ubiquitous and convenient that even some of the price insensitive customers, with high value for time, may find it worth their while to do showrooming and may fall into that price comparison habit. These customers, in the absence of showrooming, would have paid the higher price in the stores, but the easy availability of search technology sensitizes them to prices. Thus, the resulting impact of such technologies is to slowly depress the prices for an ever increasing portion of the customer base through price matching and consequently squeezing margins. As a result, unless retailers differentiate themselves on other dimensions vis-à-vis their online competitors, maintaining price levels may be difficult.

In summary, the overall impact of the developments in search technology and the rise of intermediaries like Kayak which help customers find the best-priced bargains fitting their needs is significant in the context of commodity and the undifferentiated products and services market. However, such technology, when implemented within a firm's website to help customers find what they want, builds customer value (through reduction in search cost) and a well-differentiated firm can implement such technology to add value to customers and extract that value through higher prices. What creates more competition and depressed prices in undifferentiated markets (across firms) can lead to less competition and higher prices in well-differentiated markets when used (within a firm).

Mobile technology

The discussion on search technology focused on how mobile technology combined with online price searching creates challenges for offline bricks-and-mortar stores. However, it is not very clear whether the net impact of mobile technology is all negative even for a player in the commodity or undifferentiated markets. The argument for the above statement lies in the fact that it is not clearly known how search costs are impacted in the mobile context. Consider, for example, a customer sitting in front of her laptop at home searching for the best deal on a hotel for her vacation. She probably has time on her hands to perform a thorough search (search costs are low) and get the best deal. Now, consider the same customer on the road traveling between cities and intending to stay the night at a hotel off of the highway. If she is using her mobile phone to search and get a good rate, given the amount of time she has, combined with the mobile display space, search technology and the connection speed etc., her search costs could be much higher, which means she is not likely to search as intensely as if she were back home on her laptop. This implies that alternatives that pop up immediately on a search are likely to get

much more attention from the customer than the ones that show up on a more thorough and extended search. This, in turn, implies that firms that advertise and get ad space in the mobile context could charge more for their products and services, especially if the consumption of the product/service is immediate. Thus, if a mobile search is primarily employed for immediate consumption, given the context of usage, the search costs could be much higher. This means the availability of a mobile search need not have the same price-depressing impact as in the case of a generic search online, as customers are much more likely to click on the top listings. If this is the case then firms would value search ad positions much more in the mobile context than in a generic online context. This is precisely what some of the anecdotal evidence suggests, at least in some categories. In categories such as hotels, restaurants, and auto insurance the bids for search ads are currently higher on mobile than on desktop (Ovide and Bensinger 2012). However, the average rate for ad words on mobile technology is generally lower than that of desktop for many other categories (Kafka 2012). This suggests that in certain product/service categories a mobile search is much more valuable than in other categories. The impact on pricing is, therefore, likely to be very mixed. This area is ripe for a research study to better understand the impact of the mobile search.

The same argument made above also suggests that firms can use mobile technology to promote their offering close to the customers' point of purchase or consumption. In conjunction with the GPS technology and location-based targeting, such promotion closer to the decision point of picking alternatives (choosing restaurants, hotels, performances, etc.) should reduce the search effort on the part of customers, especially when the search costs are high, and therefore, firms can use this value creation (reduction in search costs) to price their offerings higher. Mobile apps designed by firms can play a similar role by making the customer captive to their offering. However, it is not likely that a customer will use the app unless he/she is already somewhat loyal to the firm. Regardless, anecdotal evidence suggests that customers are much more "sticky" in the mobile space than in the desktop space. For example, the online search company Kayak believes that it has a more loyal mobile user base as compared to the PC user base. With the growing adoption of mobile devices around the world, analysts expect the mobile share of Kayak's total queries to go up significantly over the next year (Forbes 2012).

It is possible that in the future search technology in the mobile context can become much more sophisticated to make searches more extensive and faster. In fact, one could even argue that the tablets with their bigger screen space and faster connectivity may provide the same search functionality available on a desktop. However, the key difference between mobile and desktop arises from the usage situation – the mobile usage context is quite different from that of a desktop. The difference in time availability characterizing the usages is likely to lead to higher search costs in the mobile context.

Revenue management and dynamic pricing

Developments in search technology render the prices of offerings more and more transparent to customers. Online retailers have long stymied automatic shop bots from checking prices, with a view to reducing such price transparency. However, such attempts are not always recommended as these result in the firm's offerings not showing up in search results. Another strategy to combat the online search that is becoming rapidly popular is revenue management and dynamic pricing. The practice of revenue management and dynamic pricing started in the early 1990s when airlines started changing their prices based on the number of seats available on the plane, past demand on that route, prices charged by competitors, and the time duration between booking a ticket and the actual flight. Prices were varied for the same flight several times a day

depending on the above factors, all with the view of actively managing the demand, which is basically a perishable inventory (the seats have no value once a flight departs). Hotels adopted similar pricing practices soon after the airlines, practicing yield management that helped them to maximize revenues from their available capacity by pricing room-nights differently across the channels through which they were sold and changing the pricing as a function of time and other relevant factors. Many consultants now provide software for revenue and yield management. Some of these consultants have started providing similar software to Internet retailers. These retailers use the software to maintain the lowest price so that "their products will show up at the top of the search results by shoppers doing price comparison" (Angwin and Mattioli 2012). Therefore, in order to maintain competitiveness online in the presence of widely used search technology, these retailers change their prices several times a day using the automated re-pricing and product listing software. Such software is now being widely used by all Internet retailers, and the frequency of price changes has increased significantly over time – so much so that during the recent holiday season, when online shopping was at its highest, prices tended to change every hour. Such technology allows retailers to monitor their competitors' price and react to it almost immediately by lowering their prices below that price, sometimes even by a penny, to get the top listing in price searches.

These frequent changes in prices make it very difficult for consumers to do extended searches over a longer time (e.g., a day or two) because the prices are frequently changing. As a result, consumers are forced to act fast when they see a low price and purchase the product. By using the technology, retailers can practice yield management – some consumers pay lower prices, some higher depending on the demand and supply and competitor prices – and this enables them to increase the average price that consumers pay. This counteracts the price-depressing impact of search engines. All the above developments also render the prices more opaque and difficult for consumers to price shop effectively, as the constantly changing prices create time pressure. In addition, dynamic prices make it very difficult for consumers to form reference prices (see Kannan and Kopalle 2001), which play a key role in consumers' perceptions of a "good deal versus bad deal." Overall, this is a good way to break the price-depressing effects of search engines.

The easy availability and wide use of dynamic pricing software raises the important question of whether retailers are actually better off using dynamic pricing compared to a strategy of fixed prices and using other dimensions to add value to customers – such as superior service, quality, and assortment. This is an area for future research. Another interesting issue is whether the days of fixed prices are numbered, given the fact that prices can be changed easily in the digital age. This could imply that soft drinks could be priced higher in the vending machines on a hot day as compared to a cold day, and essential products could be priced higher in the grocery stores ahead of a big storm when the demand for them is high, and so on. We will revisit this issue in the implications section.

Customization technologies

Customization technologies are fairly easy to use and implement in the online channel, and many firms differentiate their customers based on the online channels they use to arrive at the firm's website, the devices they use to visit the website (PC versus Mac or tablets or smart phones), and their online browsing behavior. Using such customer data, firms use predictive analytics to understand customer preferences for products and services and customize their offering accordingly. Recent reports (Valentino-Devries et al. 2012) highlighted how the travel website Orbitz customizes the hotel offers they show to visitors based on the devices the visitor

uses to arrive at the website. For example, Mac users were shown an assortment of hotel rates that were 30% higher than the assortment of rates offered to PC users. While they do not offer the same hotel room-night at different prices to the different device users, the mix of services shown to Mac users are generally the higher priced offerings (pricier hotels) as compared to the PC user offerings. Technology based on predictive analytics can be used to provide promotional price discounts to first time users (acquisition costs to acquire new customers) coming through a specific channel, while regular customers get the usual prices, and to provide special discounts to customers arriving from a price search bot while customers arriving directly to the website get regular prices. Such price discrimination strategies are likely as firms tap into more data on customer behavior both online and offline.

Another price discrimination mechanism that has been used widely is online auction and bidding. While much has been written about EBay and its model, other types of bidding models (Priceline) are also very common. These outlets become another channel to clear excess inventory to bargain hunters who do not mind spending a significant effort (low search costs) in obtaining a deal. However, the appeal of such sites is limited to a specific segment of customers – deal-seekers. The model involves the bidders virtually playing a game against the firm in trying to get a rock-bottom price (Schoder and Talalayevsky 2012). But in the long run the appeal of such a model is limited. Even Priceline is moving away from a bidding model to a fixed price discounting model to increase its reach.

Other types of models adopted by firms to discourage cherry picking of their best priced products include a two-part tariff, which includes a fixed fee to become a member of a buyer group and special prices for items purchased as a member. While retailers such as Costco, Sam's Club and BJ's have had this model for a long time to encourage heavy buyers to become members and discourage light buyers, Amazon's Subscribe and Save, and Amazon Prime are similar strategies that provide special prices for bulk items based on a subscription model (Subscribe and Save) and free shipping on any item for a yearly subscription (Amazon Prime). Both these strategies by Amazon have been very effective in encouraging customers to purchase all of their needs in different product categories – CPG, books, music, DVDs, electronics, and other consumer durables – to get good prices and free shipping. This has enabled Amazon to get a higher share of their customers' wallet rather than focusing on the price or the margin of the individual product. This customer-centric focus on pricing rather than product-centric focus (see Raju and Zhang 2010) is another effective strategy to counter pressures on prices brought about by search technologies. Amazon recently tested the market to see whether their $79 yearly subscription fee for Amazon Prime was too high for customers to pay out initially to become members of a program where savings accrue over time. They started offering a monthly subscription to Amazon Prime at $7.99 a month, but soon discontinued it. This was probably because the additional membership signings were not significant, indicating that the initial yearly fee was not one of the main reasons why consumers were not signing up for the program (Mani 2012).

A variation of the bidding model that ensures that all bidders get the product at their bid price is the "pay-what-you-want" model. While this pricing strategy has been employed at museums, restaurants, etc. (Raju and Zhang 2010), this is a great price discrimination strategy for digital goods, especially those distributed through the online channel. The marginal cost of distributing digital goods – whether it is music, video, or e-books – is close to zero. The key to making margins in such goods, which are characterized by high fixed costs and very low marginal costs, is to estimate the willingness of customers to pay for such goods. Since this cannot be done very well, as long as the customers are fair, pay-what-you-want may be able to maximize revenues to cover the high fixed costs. Examples of such pricing schemes in digital

goods include the pricing of *In Rainbows* album by the music group Radiohead in 2007, and the *Humble Indie Bundle*, which are "independently produced, DRM-free, Mac/Windows/Linus video games" offered by a group of independent video game developers (Doctorow 2012). In both cases, customers were invited to pay whatever they thought the music/video game bundle was worth. In the case of video game bundles they were even allowed to come back later and pay more if they thought the games were worth more.

There are still many other trends in pricing fueled by developments in digital technology that are in the realm of digital products and services. I discuss these in the next subsection.

Developments in digital products and services

The developments in the digital products and services domain are set to usher in dramatic changes in pricing models for selling content online. Text and print content (books, magazines), music and video are being created, distributed and consumed in various formats, sometimes bundled and sold as packages, sometimes given away for free, all leading to the emergence of innovative pricing strategies. The proliferation in the number of devices through which digital content can be delivered to customers and the heterogeneity in the features, quality, capability and usage of these devices have also made the environment very challenging for firms wishing to extract the return for the value they provide customers. Consider, for example, a newspaper publication such as the *Wall Street Journal* or the *New York Times*. They are available in print format at a specific subscription price, available online for subscription at another rate, available in iPhone or Blackberry version, also as a subscription and available in tablet version at another subscription rate. Many of these formats could be substitutes for many customers. However, driven by usage situations they could be perceived as complements (see Koukova, Kannan and Kirmani 2012). For example, while the print version can be used in the mornings to scan through news at the breakfast table, the iPhone version can be used while traveling in a train to work and the desktop version can be used to e-mail/share specific articles in the newspaper to friends. Such usage occasions can render these formats complementary. For other customers, these formats could be just perfect substitutes. Publishing firms typically face challenges in pricing the different versions. Customer expectations of a lower cost for the digital version lead the firms to price them lower than print. However, if the circulation of the newspaper does not significantly grow because of new formats being introduced, they just end up cannibalizing the higher priced formats. Given this, content firms would like customers to buy content in as many formats as possible. This has led to bundle pricing strategies for much of the content that is available in multiple formats. Thus, the *Wall Street Journal*, in addition to offering different subscriptions to the individual formats, also has discounted pricing for bundles of print and online versions, bundles of online and mobile versions, and so on.

As digital formats proliferate, such bundle pricing strategies are likely to become very common. When digital formats were introduced, their pricing always tended to be at lower levels than that of the print versions – in line with customers' expectation of the marginal costs of producing digital forms. However, more recently with the introduction of iPad versions of magazines and other content, prices of digital formats are increasing significantly. In fact, in some cases, the digital version is pricier than the print version. For example, readers of the magazine *Cosmopolitan* can get their first year's subscription to the print magazine for $10. However the subscription for the digital iPad version is priced at $19.99. Given that advertising revenues are declining, content producers are looking at revenues from consumers to cover the costs of producing content without having to depend on advertising revenues. There are indications that customers are also willing to pay such prices for the content (Hagey 2013). Many magazines,

such as *Newsweek*, are also moving completely out of print format and offering purely digital content. This trend of increasing prices for digital formats will be widespread in the next three to five years.

Digital content distribution is increasingly characterized by *product-service systems*, which include the product or device platform through which digital content service is provided. Video game platforms and online video game subscriptions are the best examples of such product-service systems, but they also include devices such as Kindle or iPad through which consumers can subscribe to content services, and smart phones which require telecommunication services to derive their full value. Pricing the individual components of such systems – product and service – is somewhat complex due to several reasons. First, in many cases products and services are sold by different firms – e.g., iPhone by Apple and telecommunications services by AT&T, Verizon and others. Second, even if the components are priced and sold by the same firm (e.g., Sony's video game platform and online video game subscription services), pricing of one component has impact on the demand of the other and to optimally price them in the face of competition is tricky. In addition, the pricing of the individual components can also have an impact on channel partners and suppliers and can lead to serious channel conflict. For example, when Amazon introduced Kindle in 2007 it sold e-books for the Kindle for one price of $9.99, regardless of the title, to spur demand for the Kindle platform. At the same time, Amazon was paying wholesale prices to the publishers that were much higher than $9.99, thus selling the e-books at a loss to sell more Kindle devices. While the publishers went along with this for a while, as they were selling books at their wholesale prices anyway, they started getting concerned that customers were getting used to the artificially low e-book prices, which was going to be a problem in the long run as the customer's reference prices for books were getting set at low prices. Additionally, if the retailers like Amazon started dominating the e-book market, the publishers worried that Amazon could start demanding wholesale prices lower than the $9.99 market price. So, some publishers started partnering with iBookstore in 2010 to set higher prices for e-books made for the iPhone and iPad with Apple getting 30% of the selling price and the publisher getting the rest (Gottfried 2012). This example illustrates the challenges that characterize product-service system pricing, and such challenges are likely to get more complex in the future as these systems proliferate. Such challenges require creative ways to price the components. A good example is Verizon's recent pricing plan for Internet connectivity, which allows users with different devices such as smart phones, tablets and laptops to share the same pricing plan for up to 10 devices. This pricing plan gives customers value through the provision of options of using any device without having to worry about connectivity charges (Cha 2012).

A pricing strategy that is being tried out for popular content such as music, video, and video games is the "freemium" model, which involves providing free service to customers in exchange for their viewing of advertisements. Customers can pay a subscription to avoid viewing the advertisement or continue viewing ads while availing themselves of the service for free. Popular content sites such as Hulu (videos and movies), Spotify (music), and NYTimes (news) are good examples of such "freemium" models. This model makes sense when customers like to try out the services for the value they receive from the service and then subscribe. By giving away the service for free, a firm can also attract a lot of traffic to their website which they can use to sign up advertisers and generate revenue. They can also target the customers for conversion to subscriptions. The success of the freemium model depends on how quickly the firm is able to build traffic, sign up advertisers, and convert customers for subscriptions. So, there will naturally be a lag between traffic build up and revenue build up. Much of the success of the freemium model is yet to be proven. The success of services such as Spotify, which uses social network sites to build up both traffic and customers, will be closely watched. Again, the suppliers of content

and how they are compensated for the content will play a critical role in the sustained success of these firms. Recent reports suggest that such sustainability could be mixed for many firms, such as the video game service Zynga, which provides free access to play the games but charges money through micro-transactions for in-game items designed to expand and enhance a player's experience (Ogg 2012). In the future, depending on the success of these firms, we might see more of these pricing strategies for content services, co-existing with traditional forms of pricing for more traditional formats.

In the next section, I highlight some of the implications of the trends identified above for research in pricing focusing on firms as well as on consumer behavior.

Implications for research

All the trends we have discussed thus far open up important and interesting avenues for research. The first topic of research is the implication of dramatic lowering of search costs with paradigm shifting developments in search technology and mobile technology. Hitherto, search costs were always weighed against the benefits of search in a compensatory manner. But when search costs are infinitesimally small as a result of technology this compensatory utility model may not be applicable. Would customers resort to other types of utility model such as lexicographic utility models (that is, they would not even consider options that require more search time than a small threshold)? Would search costs rise in an exponential form with time spent searching instead of linearly or quadratically? What is the psychological impact of infinitesimally small search costs? What are implications for price competition? Would prices slide downward to Bertrand equilibrium? How would competitors react in a game setting? All these questions have important implications for pricing models to adopt and require research both in behavioral and modeling domains.

The second stream of research that has already seen some research (e.g., Jain and Srivastava 2000) which would need a re-examination is the research on price matching. With showrooming and related developments, retailers are increasingly resorting to price matching strategies to obviate the need for customers to switch to online stores for better prices. While traditional price-matching models consider a non-zero cost of switching stores (travel costs), this is no longer valid in the digital era. How do these models and the strategies they suggest change in the absence of such costs? From a firm's viewpoint, under what conditions is it optimal to match prices under different factors including competition, customers mix, and nature of products and services?

The third stream of research that is both exciting and important is the impact of mobile technology on pricing. As we have discussed before, we observe that the price of bids for keywords is different between mobile platforms and desktop platforms across categories, with desktop bids being higher than mobile for most categories with the exceptions of travel and hospitality categories. This indicates something fundamental about search behavior across categories in the mobile context. How can firms take advantage of this to shore up their pricing power vis-à-vis customers? Would mobile apps make it easier to create relationships with customers and offer customized pricing? Would mobile technology have an opposite effect to search technology on price competition? If so, under what conditions this might be possible? As more and more observations about how customers behave in the mobile environment become available, it would become easier to conduct empirical and analytical pricing research to answer the above questions.

The fourth area of research involves dynamic pricing strategies used by the firms that we discussed previously and its impact on reference prices of customers, and the implications it has

for their choice behavior. Recall that the notion of value-based pricing is conditional on a set of references – the knowledge of the price of the next best alternative, and the positive and negative differentiation features of the focal product vis-à-vis the next best alternative. However, dynamic pricing strategies – especially those that vary prices and specifications by the hour – make it virtually impossible for customers to price compare with any degree of confidence. What is the impact on customers' buying behavior in such situations where they cannot appropriately assess the value of the products and services? Are they likely to put off their purchases and delay it? Are they likely to favor stores that do not use such dynamic pricing strategies? It is important to note that such pricing strategies are already common for perishable inventories – hotels and airlines, etc. Are customers likely to assimilate in their behavior such strategies for goods and services that are not perishable? Behavioral studies focusing on such issues can provide useful insights for conducting empirical and analytical models. One issue that is relevant for firms is whether firms that resort to dynamic pricing strategies and those that use fixed pricing strategies can co-exist in a market. If they can co-exist, under what conditions is this likely?

The above questions also lead us into the fifth area of research focus – the importance of subscription pricing and two-part tariff in the evolving digital environment. Amazon Prime has been very successful in attracting the best customers and encouraging them to increase their share of wallet with Amazon. How does this type of pricing compare with the strategies of price matching followed by other retailers? Could subscription-based pricing and two-part tariff be good alternatives to dynamic pricing strategies? Under what conditions can this strategy be optimal for firms? These questions have been examined in detail in Grewal et al. 2010.

The sixth and the most promising area of pricing research involves digital products and services (see also Kannan 2013). With the proliferation of digital formats and pricing models such as "freemium," the research questions obviously focus on the viability of digital business models. For example, how can firms that sell digital products and services online communicate their value to customers better and thereby extract a higher price? Can these firms price discriminate among customers and extract any surplus? Strategies such as "freemium" (Pauwels and Weiss 2008; Shapiro and Varian 1998) produce digital products with different quality tiers to take advantage of the variability in customers' willingness to pay for digital products. How can firms measure the willingness-to-pay of their customer base using innovative marketing research techniques (see, for example, Kannan, Pope and Jain 2009)? How can they set optimal pricing strategies? Marketers of creative content ask such questions in particular because their fixed costs are very high compared with their marginal costs, and the likelihood of recouping these high fixed costs depends on the price and market penetration of products. In this context, pricing digital goods and services in the presence of piracy is also a very important factor to consider (see Jain 2008). As multi-format digital products are proliferating in content marketing space, it is also necessary to understand the conditions in which the different formats – unbundled or bundled content and bundled formats – might be perceived as complements or induce consumers' higher willingness to pay for the content. This question is particularly important for producers and retailers of creative content such as music and videos, for whom new product forms erode margins and substitute for more traditional, more profitable forms.

Finally, from the market participants' perspective, there are two sets of implications based on the trends we have seen so far. From the perspective of firms, as search costs decline with technology and digital advancements, the price sensitivity of customers is likely to increase, putting pressure on the firms to match prices with the lowest price providers. However, since more customers are likely to become more price sensitive, it is imperative that firms look at the overall value they provide customers (based on Figure 15.2) and communicate that to their loyal customers and increase their loyalty. At the same time, each firm needs to keep up with the

developments in the pricing realm and match prices so that they are able to get a share of deal-seekers. What is important from a firm's viewpoint is the mix of customers. They must focus on retaining loyal customers, while making certain they change the behavior of other customers, to make it worth their while to do all their purchases with the firm rather than shop for deals across many firms for different items. Firms will have to use more and more data on customers to tailor their prices based on customer demographics, psychographics, and online and offline behaviors. There is a proliferation of data available on customers with new tracking technologies, and it is imperative that they be used judiciously to build trust and relationship with customers. Firms have to be much more customer-centric than before, and this is the only way to enhance firm value in the long run (see, for example, Rust, Moorman and Bhalla 2010). Rather than focusing only on pricing, firms should use technological developments to provide value to customers on dimensions other than price. Any research that provides insights into these firm actions – using experiments and field studies – will be most useful.

From the customer's perspective it is clear that with the technological and digital developments, they should benefit in terms of the overall value they derive from products and services. Search costs will decrease tremendously, making it easier for them to compare alternatives and price shop. They can go to many websites, download coupons, obtain rock-bottom prices and promotion deals. However, the appeal will be primarily for those customers who are deal-seekers with significant time on their hands and low value for time. They will also find over time as firms get savvier in use of technology that their deals are no longer good deals. For others, interacting with firms that provide overall value in terms of price as well as other dimensions would be the best strategy. These customers will find that savvy firms reward their loyalty with good overall value and will be keen on establishing relationships. Understanding the variation in how customers are likely to behave in the evolving environment and respond to pricing strategies could a fruitful focus for consumer-oriented research.

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16

Human–computer interaction

Antonio Hyder, Enrique Bigné and José Martí

Abstract

Whereas marketing science focuses on studying exchanges between consumers and companies, human–computer interaction (HCI) focuses on the interaction between users and digital devices. As digital technologies are constantly altering the ways consumers interact with companies, marketers need to be aware of how human–computer interaction affects marketing research and practice. Marketing researchers consider that marketing and information systems researchers should work together to provide better understanding of online consumer behaviour (OCB). It has also been pointed out that the lack of research with a combined perspective from consumer and technology research suggests that researchers from HCI and OCB areas are not working together. This limitation represents an opportunity for conducting marketing research where it intersects with digital devices and interaction plays a key role. In this chapter we focus on making marketing academics aware of the importance of taking into account the way human–computer interaction is affecting and modifying marketing research and practice and will continue to do so in the future as digital technologies evolve.

Key words

Human-computer interaction, online consumer behaviour, consumer-technology research, combined technology frameworks, digital consumers.

Introduction

The technological macroenvironment is one of the most dramatic forces shaping people's destinies. More than ever before, a myriad of new technological innovations is being enforced upon consumers who constantly have to adapt. A substantial part of these innovations is based on digital information and communication technologies, which have already become part of their daily lives. In this ever-changing context, marketers should be aware of how digital technologies are shaping the way consumers interact with companies.

Due to the marketing orientation of this book, we exemplify the importance of making progress in the intersection between consumers and digital technologies. Some of the examples

will be made in a Web context, an already mature medium extensively used by marketers and also one of the most well researched technological contexts. However, as new technologies are expected to thrive in the mid term such as Google iGlass, Google TV, Apple TV and new versions of smartphones, similar interdisciplinary approaches from a marketing viewpoint will be required for their study.

The boundaries between human–computer interaction and online consumer behaviour

Two central aspects for studying online consumer behaviour are *consumers* and *computers.* Whilst human–computer interaction (HCI) belongs to the discipline of information systems, online consumer behaviour (OCB) is a research field within marketing. HCI is regarded as the intersection of computer science, behavioural sciences, design and several other fields of study. It involves studying, planning, and designing the interaction between people and and computers. The main goal of the HCI discipline is to research design principles and interfaces that provide better fit between human cognition and the computer's understanding of the user's task. Due to the involvement of humans and computers, HCI is grounded on research from both disciplines. In contrast OCB examines customers' online behaviour from a marketing perspective defined as 'those activities involved in obtaining, consuming and disposing of products and services online, including the decision processes that precede and follow these actions'.

As online consumer behaviour actually takes place in a technological context, researchers are starting to recognize the need to conduct research that combines computer-oriented and consumer-oriented approaches. This combined approach is required to further understanding of how consumers behave in digital online media. In fact, Taylor and Strutton (2009) claim that the marketing discipline would be better positioned to lead the study of the next area of online consumer behaviour if information systems and marketing researchers worked in collaboration. Dennis et al. (2010) differentiated between *consumer-oriented research* and *technology-oriented research,* affirming the scarcity of literature combining these two perspectives into a *consumer-technology research* approach crucial for studying how consumers behave online, specifically on Web sites. Web consumer-oriented research focuses on consumers' salient beliefs regarding their online behaviour, technology-oriented research explains and predicts consumer acceptance of online behaviour by examining the technical specifications of Web site stores. These two views reinforce rather than contradict each other. Likewise Dennis et al. (2010) acknowledge the difficulty of building joint consumer-technology models due to the lack of combined research. Thus it appears that while joint approaches are required, so far HCI and OCB researchers have not been working together. Other previous studies have focused on the intersection of different of theories. For instance a paper by Koufaris (2002) integrates constructs from marketing, psychology and informations systems. Also Mathwick (2001) classifies online shoppers with relational norms, such as behaviour loyalty, effort and enjoyment.

Overlap between human–computer interaction and online consumer behaviour

Comparison of two previous OCB frameworks developed by Cheung, Chan and Limayem (2005) and by Kwong et al. (2003), with an HCI framework suggested by Zhang and Galleta (2006), shows that OCB and HCI research areas overlap or are very similar. Table 16.1 presents a reorganization of these three frameworks to show the overlap over a substantial number of issues. For instance, *attitude* is considered in HCI and OCB research. Furthermore, although

Table 16.1 Overlap of consumer and technology research issues

Technology-oriented research		*Consumer-oriented research*	
Human–computer interaction classification (Zhang and Galleta, 2006)		*Online consumer behaviour frameworks (Cheung et al., 2005; Kwong et al., 2003)*	
Category in HCI	*Research area in HCI*	*Research area in OCB*	*Category in OCB*
Attitude	Attitude	Attitude	Consumer characteristics
	Satisfaction	Satisfaction	Post purchase evaluation
Cognitive belief and behaviour	Incentives	Incentives	Merchant and intermediary characteristics
	Intention	Intention	Consumer characteristics
	Behaviour	Past experiences / behaviour	Need recognition
	Adoption	Adoption	Online consumer purchase
	Acceptance, use	Adoption	
Development methods and tools	Social-cognitive	Social	Need recognition
Emotion	Affect, emotion, enjoyment, flow, hedonic quality, humour	Experience	Consumer characteristics
	Intrinsic motivation	Motivation	
Performance	Effectiveness, efficiency, performance, productivity	Navigation, usefulness	Medium characteristics
Trust	Loyalty, trust, risk, security	Continuance, trust, risk, security	Consumer characteristics
			Online consumer purchase
User interface design and development	Interface metaphors	Interface	Medium characteristics
	Information presentation	Web site design and content	Information search
			Medium characteristics
		Information presentations	Product / services characteristics
		Layout	
	Instrumental usability (Ease of use)	Ease of use	Medium characteristics
User interface evaluation	Usability	Navigation	Medium characteristics
User support	Issues related to user support, general support and information centre	After sales services	Post purchase evaluation
			Merchant and intermediary characteristics

Table 16.1 illustrates research areas that are similar and overlap across OCB and HCI, other HCI areas overlap with marketing topics that are not represented in the frameworks of Cheung et al. (2005) and Kwong et al. (2003) such as information presentation evaluation, information quality, self-efficacy, perception, belief and privacy. The lack of inclusion of these issues in previous OCB and HCI frameworks could evidence many research gaps that still exist due to the fragmented nature of OCB. OCB researchers may not be fully aware of HCI research, or HCI researchers may not be fully aware of consumer-oriented research. This drawback, in turn, represents substantial opportunities for research in these disciplines.

A broad conclusion to this finding is that, in the particular case of online technologies such as Web sites, researchers from both disciplines should work together to develop Web site research so that *exchange*, one of the fundamentals of marketing (Bagozzi, 1975), can take place amongst online companies and consumers. Despite some heterogeneity in Web site design, most companies still simply rely on HCI models developed by engineers for technologies such as Web sites, and ignore the needs of their target consumers, an aspect studied in OCB.

Interactivity

Interactive digital media allow consumers to actively participate in an interactive process with a technological device, select the information they receive and build a two-way dialogue with companies and their applications. On media such as the Web, interactivity is the attribute that most distinguishes Web sites from other media, and is also considered as their key advantage (Huang, 2003). Web interactivity refers to the information exchange that takes place between a Web site and its users (Huang, 2003).

Currently, however, there is controversy regarding where interactivity actually takes place (Shrum, Lowrey and Liu, 2009) as different researchers suggest that it can reside in consumers' eyes and not in an information system itself (Song and Zinkhan, 2008) or it can reside among different entities (Shrum et al., 2009). Three types of interactivity have been assumed to exist: human–human, human–message and human–machine (Ko, Cho and Roberts, 2005). Interactivity can be defined as a structural characteristic of a medium and message or as a subjective experience perceived by the interacting parties. From a structural perspective, interactivity can be an innate attribute of a medium such as the Internet, or a message or environment within that medium, such as a Web site, created through the design features of the medium or environment (Sicilia, Ruiz and Munuera, 2005). Online interaction research has established perceived interactivity as a central driver of online behaviour (Goode and Harris, 2007). Potential benefits of interactivity include performance quality, time saving, satisfaction, a sense of fun and engagement (Teo, Oh, Liu and Wei, 2003).

Nagpal and Krishnamurthy (2007) affirm that companies are underutilizing the potential of interactivity, as customer relationships can be built through greater interaction, producing entertaining designs. Increased levels of interactivity on a Web site have positive effects on users' perceived satisfaction, effectiveness, efficiency, value, and overall attitude towards the site (Teo et al., 2003). Likewise, Song and Zinkhan (2008) identify key features that enhance consumer perceptions of interactivity and suggest that Web designers who want to determine how users interact with the contents of a Web page, may need to address issues related to the site's interface. Interactivity theory is also useful for describing how to incorporate computer-mediated communication channels such as e-mail. Research on interaction also refers to the communication between users and computer interfaces, where the interface is the medium that enables user experiences. The exchange of information between humans and computers takes place on the interface, the point of communication between computers and human beings.

Interfaces on digital devices

As online consumers have to base their judgment on the information presented on technological devices, interface design plays a significant role in affecting consumers' online performance and attitude towards the device (Hong, Thong and Tam, 2005).

How information is displayed directly impacts how it is interpreted and used. Robust manipulations of user interfaces must be employed to provide a better mental representation of information and consumer goods. An interface represents the union of information design (i.e., how data is categorized, presented and made meaningful to the user), interaction design (i.e., how the information tells a story), and sensorial design (i.e., the techniques employed to stimulate and utilize the five senses) (Tarafdar and Zhang, 2005).

Online environments are playing an increasing role in the overall relationship between marketers and their consumers. Digital technologies, to a great extent, depend upon Web interfaces and how users interact with them (Hong et al., 2005). The failure of commercial Web sites is the result of neglected consumer needs and the fact that users have to learn how to use each Web site. Customers should be consulted in order to create site interfaces that meet their requirements (Junaini and Sidi, 2007). Although the task of designing interfaces is challenging (Singh, Dalal and Spears, 2005) content should be adequately organized so that users can receive expected contents in the best possible fashion (Stibel, 2005). In the case of Web sites, the presentation of each one should depend on its specific goals and product and user characteristics should be taken into account in the design (Junaini and Sidi, 2007).

When the same information is presented in different structures, people tend to have a different perspective of tasks, and consequently perform differently. Therefore it is important to understand and apply different models of presenting information, and the ways in which the information will be used in order to enable the design of more intuitive and compelling online user experiences (Stibel, 2005). In digital environments, consumers' cognitive maps do not match the processes of computers as currently, consumers can only navigate the Internet in a top-down fashion, using a singular semantic hierarchy (Stibel, 2005). It has also been argued that fitting a human–computer interface to users and tasks enhances performance (Te'eni, 2006). However most companies do not take this into account and simply rely on default interfaces and mental models developed by engineers (Stibel, 2005).

There are theories for understanding how consumers behave with interfaces. *Scanpath theory* (Norton and Stark, 1971) was developed for the modelling of eye movement patterns while viewing and recognizing objects. Scanpath theory suggests that subjects will follow certain scanpaths when viewing and recognizing a same stimulus. Two types of scanpaths have been identified and empirically validated. The first are local scanpaths, where fixations follow each other in immediate physical succession. In local scanpaths, eye movements are regulated by momentary fixations based on peripheral information in a bottom-up mode. Peripheral information in the visual field will determine fixations and local scanpaths. The second type is called global scanpaths, which reflect the distribution of fixations over a longer time frame irrespective of the immediate physical sequence. In global scanpaths, fixations are usually distributed over a visual field and are located more loosely with each other. In contrast to local scanpaths, global scanpaths are directed by top-down processes such as search plans or cognitive strategies. Scanpath theory can be used to trace eye movements under different browsing and search conditions, under different levels of attention, and with the presence or exclusion of surrounding objects.

Cognitive fit theory (CFT) was developed by Vessey (1991) with the aim of understanding how the fit between the information presentation format of a task and the decision-making task could influence an individual's problem-solving performance. When an information presentation

format does not match a task, the decision-maker must exert increased cognitive effort to transform the displayed information into a form suitable for solving the particular type of problem. This effort requires additional decision-maker time to develop an accurate mental representation and/or a potentially incomplete mental representation leading to decreased decision accuracy. Cognitive fit theory has been empirically tested in a range of problem solving domains such as problem-solving skills and tools, maps, data representation and multimedia (Speier, 2006). Te'eni (2006) proposed a framework for the study of fit as illustrated in Figure 16.1. In this direction, Hauser et al. (2009) proposed a method for a Web site automatically and in real time by matching website characteristics to customers' cognitive styles.

Competition for attention theory (Janiszewski, 1998) is based on the belief that multiple objects on a screen are seen as potential candidates competing for the attention of users. Janiszewski (1998) affirmed that competition for attention would not only affect the duration of eye fixation that an object receives, but also the efficiency of information processing and even actual sales of products contained within a product range.

As a conclusion to this section, due to the ever growing enforcement of digital devices on consumers, marketers should be aware of the relevance of interactivity between consumers and digital devices, as it closely resembles the scientific meaning of marketing, concerned with exchange (Bagozzi, 1975). However, interactivity is still a research field in progress and it is not yet clear where interactivity actually takes place.

Measurements with digital technologies

For marketers, one of the advantages of digital devices is the ability to trace online user behaviour, and therefore to assess consumer performance within Web sites. Practitioners and researchers are thus able to use the rich source of detailed online behavioural data. Digital technologies such as Web sites are considered the most measurable channels as Internet servers where the sites are hosted can provide information reflecting consumer behaviour, including their navigation

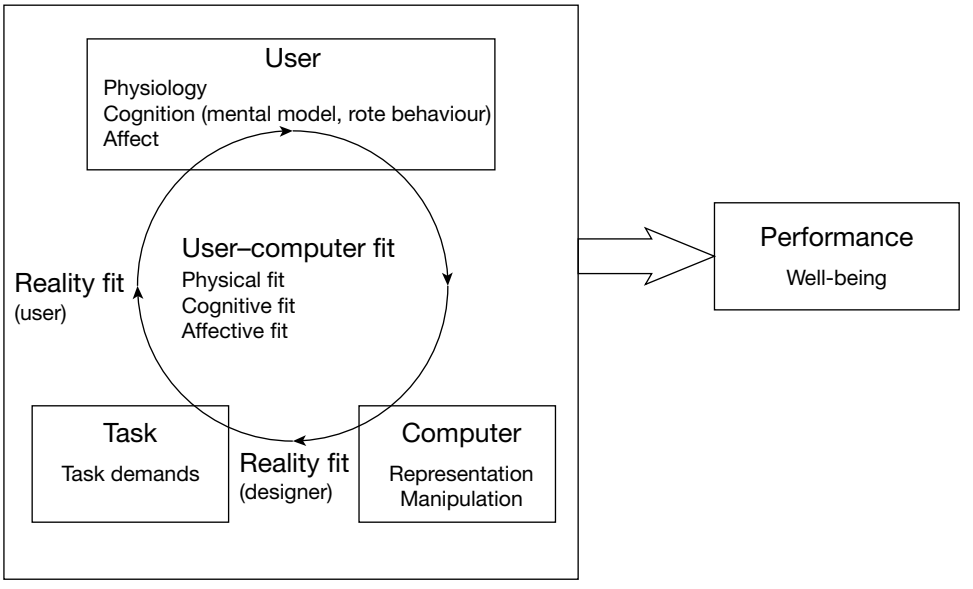

Figure 16.1 Revised framework for the study of fit theory

patterns. Clickstream data and EIPs can be used to assess how consumers behave within a Web page, within a Web site and across Web sites. This type of data can be downloaded from Internet servers and online surveys can be used to assess what consumers perceive and think. Large data sets with user information captured by the Internet and multimedia have been termed 'Big Data'.

Clickstream data. Clickstreams are the paths consumers take through one or more Web sites. They have been defined as 'the electronic record of Internet usage collected by Web servers'. Clickstream data shows the sequence of pages or the path viewed by users as they navigate on a Web site, thereby providing an opportunity to monitor and understand customer activity. Detailed clickstream variables are more important than more general ones. Basic metrics can be meaningless when evaluating a Web site's success, and this can lead to inaccurate conclusions. Web metrics used to assess success for one Web site do not necessarily define success for another. While consumers navigate a Web site they generate a wealth of clickstream data as they continuously deal with data. This information can be stored, retrieved in the future and can be used to build knowledge for the challenges ahead. Clickstream data can include within-Web site information such as the pages visited, the time spent on each page, and between-site information such as the number of Web sites visited.

Elementary information processes. Whilst clickstream data usually serve to measure within-Web site navigation, elementary information processes (EIPs) can be used to trace page behaviour within a Web page. EIPs are simple cognitive operations such as reading a value, comparing two values or adding them into a person's memory, and are used in science research to measure cost of effort, for instance when scanning or reading a data chart, comparing or adding numbers. EIPs are particularly useful for measuring consumer behaviour effort in restricted contexts such as computer interfaces or Web pages.

EIPs are the basis of Mouselab (Johnson and Payne, 1985), a computerized process tool (CPT) that generates EIP data providing a sequence of data about items in a product display, including frequencies and browsing times, and serve as a means to study consumer choice behaviour (Lohse and Johnson, 1996). Whilst clickstream data are usually used to acquire stored information regarding the navigation patterns of Web visitors amongst different Web pages that form part of Web sites (Senecal, Kalczynski and Nantel, 2005; Bucklin et al., 2002), CPT allows tracing within one single Web page. Lohse and Johnson (1996) used EIPs to calculate process tracing effort on a computer screen, as each process tracing method requires different levels of information acquisition effort. This paradigm predicts cognitive effort as a function of the number of EIPs required to undertake decision strategies. The EIPS they used in their experiment and their descriptions are illustrated in Table 16.2.

Table 16.2 Selected elementary information processes used in decision strategies

EIP	*Description*
Scan	Move focus of attention to an appropriate area of the display
Search	Point the needed information within the area that Scan has selected
Read	Read an alternative value on a given attribute in working memory
Move	Go to the next external environment element
Compare	Compare two alternatives on an attribute
Choose	Announce preferred alternative and stop process
Difference	Calculate the size of the difference of two alternatives for an attribute
Add	Add the values of an attribute in working memory
Product	Weight one value on an attribute in working memory
Eliminate	Remove an alternative attribute from consideration

Laser-based eye tracking devices, such as eyeglaze and tobii, are similar to mouselab as they also record information presented on a computer screen and produce similar data. Eye tracking is capable of resembling a natural situation such as simple reading, scanning or searching, and can also be assesed with EIPs. In the last decade the use of eye-tracking technologies has grown rapidly in Europe, the United States, Asia and Australia for assessing the effectiveness of visual marketing efforts (Wedel and Pieters, 2008). A further discussion on eye tracking and its use in marketing research can be followed in Pieters and Wedel (2004) and Pieters, Wedel and Zhang (2007).

Online surveys. Online surveys are commonly used in Internet marketing research (Steenkamp and Geyskens, 2006). Online surveys are inexpensive, facilitate coding of response data and allow faster data transmission and response times.

Clickstream and EIP data are used to assess Web site navigation and cannot assess consumers' replies, for which surveys are deployed. When using online surveys, data is usually collected from respondents at the end of the task (Lyons et al., 2005). Researchers can use ready-made software such as surveymonkey.com, Qualitrics, or develop their own using Web development software such as Dreamweaver.

Overall, the combination of clickstreams, EIPs and online surveys represent a robust approach for assessing how consumers navigate on interface equipped digital devices.

Big Data. This term refers to large data sets with information captured by social media, the Internet, and multimedia. Big Data will soon become the basis of competition for products and services in the marketplace (Manyika et al., 2011). Big Data are related to analytics, but differ in three key aspects: huge amounts of data are created each day (about 2.5 exabytes); the data is real-time or nearly real-time; and a substantial variety of data takes the form of messages, updates, images posted to social networks; readings from sensors; GPS signals from cell phones and more (McAfee and Brynjolfsson, 2012).

Modelling data obtained from social networks will further understanding of the implications of interactions among agents and allow managers to observe how a stimulus targeting a single individual can be magnified and multiplied by dispersion through that person's social network (Hartmann et al., 2008) and to use this information to their advantage. Korenich and colleagues provide greater insight into social media in Chapter 17 of this book.

New psychological concepts used in OCB

New concepts for study are emerging in the discipline of online consumer behaviour such as flow, stickiness, cognitive locking, information overload, sentiment and engagement.

Flow is a state in which 'people are so involved in an activity that nothing else seems to matter' (Csikszentmihalyi, 1975). Flow theory has been used in research related to information system environments, where users enjoy positive experiences with computers. Flow was applied for the first time to online consumer behaviour research by Hoffman and Novak (1996) as they conceptualized flow on the Web as a cognitive state experienced during navigation.

Stickiness is 'the user's willingness to return to and prolong his/her duration of stay on a Web site' (Lin, 2007). It is emerging as a crucial factor in the success of online stores due to the inability to maintain users on Web sites and is of particular relevance for Web marketers as acquiring customers is more expensive on the Internet than in conventional channels (Li, Browne and Wetherbe, 2007). Stickiness needs appropriate management as whilst companies want to design shopping Web sites that ease consumers' information search, at the same time they also want to retain consumers as long as possible on their sites to expose them to more product information (Hong et al., 2005).

Cognitive lock-in is consumers' decreased propensity to search and switch after an initial investment when navigating on a Web site, which is determined by a preference to minimize immediate costs and by the inability to anticipate the impact of future switching costs (Johnson, Bellman and Lohse, 2003). Managers of Web sites with customers locked in by the ease of using the site may be able to take advantage of cognitive switching costs and, for instance, charge price premiums.

Information overload. Human cognitive resources are limited and users cannot process all the information available at any given moment (Huang, 2003). Digital devices can provide consumers with vast amounts of ever growing information. When consumers are confronted with too much information, they experience information overload. Information overload results in a decrease in the perceived informativeness of a Web site (Lurie, 2004; Park and Lee, 2008). Research by Web Top found that 71% of British Internet users feel frustrated and stressed by online information overload (Su, Comer and Lee, 2008). To deal with cognitive overload and make the process more intuitive for consumers, Web sites should be adequately designed for their objectives, reorganizing Web pages, expanding and refining colour usage, consistency, instructions and other simple heuristics that greatly benefit the user. Similarly, feature fatigue occurs when a product has so many features that it becomes overwhelming for consumers and difficult to use (Thompson, Hamilton and Rust, 2005).

The *sentiment* expressed by users when posting comments on social networking sites, microblogs and discussion forums is also of growing research interest. Recently Schweidel, Moe and Boudreaux (2011) investigated the potential to infer how consumers love brands from investigating social media conversations. People express positive sentiments when they have good experiences with a brand and its products, and the contrary with negative experiences.

Engagement. Recent Internet industry attention is being given to this term. Whilst references to engagement can be found in academic literature from different research fields, there is a scarcity of research in the context of digital devices. In plain English, to *engage* is to *'involve (a person or his or her attention) intensely'* (Collins Essential English Dictionary, 2006). In academic research something that 'engages' us is something that 'draws us in, that attracts and holds our attention' (Chapman, Selvarajah and Webster, 1999). The concept of engagement has received broad and recent attention across a range of academic disciplines, including education, sociology, psychology, political science and organizational behaviour (Hollebeek, 2011; Brodie et al., 2011). Because engagement is a context-specific concept its meanings have varied widely, presenting potential variations in the interpretation of the concept.

At present there is a contradiction between how industry and research assess Web site engagement. The Web Internet industry focuses on the use of clickstreams to measure engagement (Nielsen, 2005). With *Google analytics*, managers can measure their site engagement goals against threshold levels that they define (Google, 2013). These thresholds are primarily determined solely with clickstream variables and do not take into account attitudinal consumer experiences commonly assessed by asking consumers.

Customer engagement has been conceptualized in terms of a psychological state (Mollen and Wilson, 2010) and therefore surveys would be required to assess this construct. However, the Web industry is measuring engagement using clickstream data, perhaps due to the ease of downloading such data from Internet servers. In order to clarify this contradiction Hyder (2011) suggested a Web site engagement measurement and clarified whether it should be assessed with information systems variables such as clickstream and EIP variables, with consumer behaviour psychological variables assessed with surveys, or with a combination of both. By developing a new methodology that combines technology and consumer perspectives, this researcher developed a *data acquisition Web site* capable of remotely tracing and recording within-Web page

and within-Web site consumer behaviour. The site resembled an online travel agency selling holiday packages in the Seychelles Islands and made it possible to trace the path a consumer takes within the Web site and also within the Web site's main interface page containing a product catalogue with twelve different holiday packages.

The results of his research revealed that Web site engagement has five formative dimensions that can only be assessed with surveys and that computer clickstream and EIP variables have no influence on engagement. The dimensions are positive affect, focused attention, curiosity, up-to-dateness of information and involvement. His finding questions the clickstream approach currently used by industry to assess behaviour on Web sites. As most Web companies are Small and Medium Enterprises (SMEs) that do not use the power of scientific research, it could be argued that most SMEs are adopting 'success metrics' enforced by large online companies or by the Internet industry in general. Industry approaches affirming that engagement can be measured with online clickstream data are far from reality.

Future research: technologies that will impact marketing

In this final section we exemplify some of the technologies that will impact marketing research and practice and should therefore be taken into account in future research. Although no-one can foresee the future, the objective of this chapter is to help marketers realize the importance of how digital technologies are modifying the ways companies relate to consumers. Marketers must therefore take into account HCI as a discipline of paramount importance in their marketing efforts.

The vast majority of flourishing HCI digital technologies come from Silicon Valley, the product of more than 60 years of massive investment of public and private capital. It is home to many of the world's digital technology companies including Apple, Google, Facebook and Twitter. It amasses the largest portion of the world's venture capital and is a geographic area where many meetups take place such as *Hackers and Founders*, *106 Miles* and *SV New Tech*. Whilst at present product development seems to be focused mainly on software, trends indicate a return to hardware development. Therefore there is presently vast potential for conducting technology-marketing research focused on the impact of hardware. We expect that research on software will catch up with research on hardware over the years to come.

1. *The Web is global.* Due to the intangibility of services such as finance or travel, the Web makes it possible to do things that were previously impossible. However even today, many consumers do not take full advantage of the opportunities afforded by the Web, perhaps because they do not fully understand that the Web is a global technology that operates on a global scale. As an example, it is now possible to purchase online products and services from travel agencies in foreign countries. Travel services are the most sold category on the Internet due to intangibility of travel reservations. Travel agencies around the world sell similar services at different prices and one of the main factors affecting price is supply and demand. As the Internet allows reservations to be made from anywhere in the world, a consumer in one country can make an online reservation in a second country in order to visit a third country. For instance, whilst the purchase of a 14-day holiday package from Spain to China can cost around €2,600, a similar holiday package to China bought in Malaysia can cost around €220. This occurs because there are more people going on holiday to China from Malaysia than from Spain. Spanish travellers can therefore benefit from a substantial price reduction, provided they are aware of this situation and are willing to purchase their package online from Malaysia and pay for a flight from Spain to Malaysia

(typically between €600–€750). An 8-day holiday package to Myanmar typically costs €2,100 whilst the same holiday package purchased in Myanmar costs $US 400 (approximately €310). As in the previous situation, Spanish travellers must also organise their flight to Myanmar, a reservation that can also be made and paid for online. Smartphones connected to the Internet also allow access to the global Web and therefore similar benefits can be achieved with data obtained on these devices.

2. *Smartphones.* Smartphones are mobile phones that have greater connectivity and computing capability than a traditional mobile phone. They have an operating system and allow the installation of software applications. In 2012, Eric Schmidt, executive chairman of Google, forsaw that the smartphone revolution would soon be a universal mobile experience, available to the majority of the world's population at the fraction of the price of today. Based on Moore's Law, in 12 years phones will be at least 20 times faster and $400 mobile phones will cost $20. When phones reach this price they will be more affordable for a billion more people in developing countries. This will change their lives as smartphones have already changed the lives of consumers in the developed world. For instance, phones can be preloaded with basic medical diagnostic tools. With the camera, video and sound features of phones people will be able to locate appropriate medication, interact with doctors, and remind people of medication intakes. Even today's centralized data carrier hubs will no longer be necessary as phones will be able to share data amongst themselves in a peer-to-peer relationship forming a mesh network. At present the majority of smartphone platforms are dominated by Google's Android, Apple's OS/2, Blackberry's messenger and recently Samsung have introduced their Tizen operating system.
3. *Apps.* App is short for 'application', which is another name for a computer program. Normally, when the word app is used, it mainly refers to programs that run on mobile devices, such as smartphones or Tablet computers. Apps are usually available on platforms operated by the owner of the operating systems such as Google Play for android applications or the Apple store for OS/2 apps. Consumer demand for apps has dramatically increased since 2010 and the availability of developer tools has driven expansion into categories such as ticket purchases, mobile banking, mobile games and weather prediction, to name but a few. Marketers must be fully aware that with just the click of a button on a mobile phone consumers are already empowered with software that is dramatically changing the ways they interact with organizations and companies. As the penetration of smartphones increases so will the number of apps. In 2013, mobile devices will overtake PCs as the most common Web access tools and by 2014, there will be more than 70 billion mobile app downloads from app stores every year (Forbes, 2012).
4. *The Cloud.* Cloud computing is the use of computer resources delivered over the Internet. Cloud computing refers to applications delivered as services over the Internet and the hardware and systems software in the datacenters providing those services. Cloud is the datacenter hardware and software cloud (Armbrust et al., 2012).

   From a hardware perspective, three aspects are new in cloud computing:

   1. The illusion of infinite computing resources available on demand, thereby eliminating the need for cloud computing users to plan far ahead for provisioning.
   2. The elimination of an up-front commitment by cloud users, thereby allowing companies to start small and increase hardware resources only as their needs increase.
   3. The ability to pay for use of computing resources on a short-term basis as needed (e.g., processors by the hour and storage by the day) and release resources as required.

The cloud is expected to change the way we store information as it allows remote computing and storage. On the cloud it is possible to run software programs, access content or share content with other users. Companies like Apple, Google and Rackspace run their own clouds. However for the cloud to reach its full potential, devices from different manufacturers and with different operating systems need to be able to talk to each other, and this does yet not happen due to competition between hardware and software developers. In the smartphone world the largest operating systems are Android used by Google and OS2 used by Apple. Although these two operating systems are still in competition with each other, steps have already been made for manufacturers to collaborate as occurred with the development of the universal phone charger in 2010. Whilst at present app developers need to program different versions of their software in order to obtain a market share, the situation could change over time. In any case, marketers need to be aware of how technical aspects like standardization of existing protocols or the creation of new ones will affect how they market products and services to consumers.

5. *Online collaboration and crowdsourcing.* Crowdsourcing refers to the process of outsourcing tasks to a distributed group of people that can be scattered in different locations. With crowdsourcing it is possible to collaborate online in order to manage projects or solve complex problems. Through online collaboration, knowledge building can be done differently than in the past, experts can be consulted online without the need to physically relocate people or organize conferences in order to foster discussion amongst peers. Online crowdsourcing platforms include Crowdrise, Wikipedia and OpenIDEO. OpenIDEO launches challenges to participants who collectively and remotely work on concepting and evaluating ideas in order to solve problems. As an example, in 2012 the European Commission launched a challenge on how to support Web entrepreneurs when launching and growing sustainable global business. It called for inputs in a quest to identify how to increase the competitiveness of Web enterpreneurs in order to catch up with the US, as the vast majority of successful Web based companies are based there.
6. *Digital marketing.* Since the advent of the 4Ps of marketing developed for tangible products in the offline world, computers and the Internet have dramatically modified the way companies and people interact. Digital marketing refers to marketing based on interconnected computers, smartphones and novel hardware platforms. 'Digital marketing' is an evolution of the term 'Internet marketing'. However, as the development of new devices and technologies will continue, digital marketing refers to marketing techniques based on any digital technology. As new devices and software are enforced on consumers, the scope of digital marketing will therefore evolve and this will force marketers to be more adaptable. Companies like Facebook, Google, LinkedIn and Microsoft which manage the major digital platforms for web and mobile services are constantly innovating. These companies use agile development which means that new features are released daily. As consumers adopt these new features, more adaptable companies will have greater opportunities to reach and influence early adopters. Companies need to put in place agile management so they can review new marketing options, select the most promising, deploy and then iterate to test what is effective (Chaffey and Smith, 2012). Digital marketing can take place on email, Web sites, search engines, blogs, social media, games, instant messaging, mobile phones, apps and Web TV platforms, to name just some of the most obvious applications. Software packages like Google analytics are used to analyse online consumer behaviour on Web sites. UCINET is used to analyse data on social networks and allows for the computational aspects of analysis, including the calculation of various measures (e.g., centrality, cohesion, brokerage) among others. NetDraw is a social network visualization

software that allows graphic representation of networks including relations and attributes. It has some analytic capabilities that partially overlap with UCINET.

7. *Tablet computers.* Tablets are a type of of mobile computer, usually with a touchscreen or pen-enabled interface that runs an adapted version of a desktop operating system. According to Intel's chief technology officer, manufacturers are still trying to find a position for their tablets on the market. However, it is still not clear where these devices will find their place as normally consumers tend to carry up to two of these three devices: a laptop computer, a mobile phone or a tablet, but not all three.
8. *Webcasts.* Webcasting is broadcasting content over the Internet. Content can include audiovisual content such as video, a visual presentation such as power point slides, as well as audio. A Webcast can be either live or on demand. Webcasting also allows videos to provide feedback. A typical situation would be a presentation where viewers can speak or chat back with the presenter via the computer's microphone or keyboard.
9. *Social media*. Also known as Social Networking Sites (SNS), they have become one of the fastest growing Web 2.0 services worldwide in developing and developed countries (Boyd and Ellison, 2007) providing services that allow people with common interests to create online communities. SNSs allow for contact and information exchange among users, which includes sharing photos and videos, personal blogs, group discussion, real-time messaging and e-mails, thereby enhancing social interaction (Hsiao, 2011; Wang et al., 2010). SNSs have been defined as 'interactive platforms via which individuals and communities create and share user-generated content'. Social media are social software that mediates human communication. When the technologies are in place, social media is ubiquitously accessible, and enabled by scalable communication techniques. In 2012, social media became one of the most powerful sources for news updates through platforms such as Twitter and Facebook. Social media increase citizen engagement, and make it possible to organize pressure groups oriented towards policy decision-makers, limit the bias of journalists and desintermediate public opinion. Social media were a key player in the 2011 Arab uprisings as citizens used these technologies to exercise individual freedom of expression.
10. *Web-based TV platforms integrated with mobile phone: Google TV and Apple TV.* Google TV is a Smart TV platform with an interactive television overlay on top of existing Internet television and WebTV sites. It acts as an entertainment hub allowing users to search for video content browsing on the Web. It allows recording and access to contents such as photos, music, games and apps that have been recorded previously. Apple TV is the Apple version of this device. It works with a number of video formats including MPEG, iTunes sourced video, and YouTube. It plays encoded audio such as WAV or AAC, and can display digital photos. Both Google and Apple are working on improving the ways their TV technology shares content between these devices with Android and OS2 smartphones. These devices are expected to eventually be able to push content between parties, therefore when the technology becomes available, this will once again change the ways that consumers interact with content and also with each other. Previous user generated video-sharing technology includes Pandora TV, and Netflix provides on demand streaming of media over the Internet. However these two services are not integrated with mobile phone platforms.
11. *Google Glass.* Google Glass is intended to be a wearable smartphone worn as eyewear. On its head-mounted display, it has a small embedded camera and will display information in a smartphone-like format. Consumers will be able to operate the device hands free and interact with the Internet, take pictures, receive video content, answer phone calls and deal with text messages, organize schedules, have a video conference or run apps such as Google maps to show routes to a destination based on real-time information.

12. *Advergames*. Advergames are hybrid messages (Balasubramanian, 1994) that blur editorial content (i.e. the videogame itself) with advertising content (i.e. a brand message embedded in the videogame) that differ from other commercial attempts to use videogames by introducing product placement (Lee and Faber, 2007) or in-game advertising (Lewis and Porter, 2010). Advergaming implies the use of branded videogames to achieve one or more marketing goals. These objectives can vary from cognitive (i.e., increasing brand recall, brand notoriety or brand familiarity) to affective (i.e., increasing positive brand attitude) or behavioural (i.e., increasing intention to use a brand, or a product or a service). For example, players can spend up to 17 minutes playing advergames (Hein, 2006) enabling long-time exposure to the brand, thus facilitating increasing levels of brand notoriety, brand salience, brand familiarity, or brand recall.

Most of the tools and technological applications described in this section lead to massive interaction among users. The Big Data trend is currently addressed from a marketing viewpoint. Marketers analyse data to obtain insights into how consumers think and behave and this trend is creating managerial issues in companies. Extending this collaborative view demands a new model for decision-makers and managers. The term Wikinomics stands for how mass collaboration changes a company's operating model and business model (Tapscott and Williams, 2006). Cooperation, joint ventures and similar are just small parts of the myriad of collaborations that extend beyond established companies in a product category. Wikinomics deals with stakeholders' collaboration, known as social intelligence, which reflects the use of digital information for adopting managerial decisions. New concepts are ever emerging. Among them, network intelligence, crowd intelligence, live testing, sentiment analysis, or Influencer intelligence, are becoming well-known examples (Harrysson, Metayer, and Sarrazin, 2012). All of them are based on openness, as Tapscott suggests, anchored in four basic principles: collaboration, transparency, sharing and empowerment (Tapscott, 2012).

Not only the consumer but also other stakeholders engage in new collaborative processes that benefit both firms and stakeholders: from brand co-creation (Hatch and Schultz, 2010) to product innovation (Sawhney, Verona and Prandelli, 2005). This new world for human–computer interactions is fuelled by online interactive networks such as Social Networking Sites or brand communities (Fournier and Lee, 2009; Muñiz, and O'Guinn, 2001) with mobile technology and cloud computing making these interactions ubiquitous and user-centered. Firms will need to devote increasing resources to manage these new interactions that will lead to competitive advantages over walled garden firms working on old self-centered frameworks.

The scope of this managerial vision exceeds the purpose of this chapter. Nevertheless it boots a new way of doing business, interconnecting citizens and countries. This is not a narrow fashionable trend for tech industries. The Open Innovation Journey is leading to a paradigm change in innovation management, as Chiaroni, Chiesa and Frattini (2011) illustrate for a cement manufacturer.

Conclusion

In this chapter we focused on making marketing academics aware of the importance of taking into account the way human–computer interaction is affecting marketing research and practice and will continue to do so as digital technologies evolve. Technology is shaping people's destinies more than ever and marketers need to understand how it shapes their interaction with consumers as computers and digital technologies are present in every part of our lives, in personal and business contexts. The marketing discipline of online consumer behaviour will progress as

marketers walk hand in hand with the discipline of HCI. As online consumer behaviour actually takes place in a technological context, researchers are starting to recognize the need to conduct research that combines computer-oriented and consumer-oriented approaches. These two perspectives reinforce rather than contradict each other. Using engagement as an example, we explained the contradiction between the Internet industry and Internet scientific research: Whilst the Web Industry is measuring engagement with clickstream data, researchers favour measurement of engagement with variables that can only be assessed using surveys. Finally, we reviewed different technologies that will impact marketing including the Web, smartphones, the cloud and advergames in an attempt to show marketers that while we might not be fully aware of how these technologies are creating new paradigms, they are certainly here to stay and will change the marketing discipline.

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17

The Slogan Validator

The application of human–computer interface

Wan-Chen Wang and Luiz Moutinho

Abstract

Researchers and practitioners frequently rely on information they gather from self-report measures to gauge consumers' emotional responses to advertising stimuli and consumption-related experiences. However, the drawback of this technique is that cognitive bias often shades the consumer feedback. Therefore, recent research highlights the demand for methods of evaluating emotion that go beyond self-report measures and calls for cooperation with other fields of research in order to advance the study of consumer emotion. This area contains much room for improvements and this paper presents just one of the new possibilities: the Slogan Validator. The findings show that the Slogan Validator measures were a more sensitive discriminator between advertising slogans than self-report measures. The preliminary results reveal that our approach takes the first steps on a path leading to the increased effectiveness of advertising copy strategy.

Key words

Emotional responses, self-report measures, psycho-physiological measurements, human–computer interaction, Slogan Validator.

Introduction

Numerous advertising and marketing researchers emphasized the significance of emotion in decision making and consumer behaviour (e.g. Hall, 2002; Du Plessis, 2005; Haimerl, 2007). Accurate measurement of emotions is critical given the significance of emotions in the advertising process. Researchers continually measure the emotional responses of consumers to advertising in various ways (Bagozzi et al., 1999). Nevertheless, evaluating emotion is understandably complicated.

Classical affect evaluation methods tend to utilize questionnaires that ask the consumer about what he/she feels at that moment or, following an experiment, interviews that play back a video recording of the consumer, asking him/her to indicate his/her feelings at each moment of the

time. Self-report questionnaires have numerous limitations, such as bringing forth rationale tendency in respondents and discouraging spontaneous responses (Hupp et al., 2008). Several marketing researchers (e.g. Oatley, 1992; LeDoux, 1996; Babin et al., 1998; Bagozzi et al., 1999; Lee et al., 2007) affirmed that the measurement of emotions must supersede self-report measures and call for collaboration with other research fields in order to move emotion and marketing research forward.

Academic research on human–computer interaction (HCI) combines the experimental methods and intellectual framework of cognitive psychology with effective tools from computer science. It emphasizes a controlled experiment, which yields more objective and reliable results. Experts predict that HCI, one of the five branches of management information systems (MIS), will resurge in the post-millennium era (Li & Zhang, 2005). To date, however, only few researchers have delved deeply into existing studies or drawn up an extensive picture of this sub-discipline.

Emerging HCI literature has focused on the role of marketing in hypermedia computer-mediated environments (CMEs) (e.g. Hoffman & Novak, 1996). O'Keefe et al. (2000) attempted to understand this interface by combining concepts from marketing, HCI, and culture, and found that marketing experiments that involve the use of questionnaires typically find fewer differences between the subjects under observation. Spiekerman and Paraschiv (2002) investigated the issue of motivating human–agent interaction by incorporating insights from behavioural marketing to interface design. Their paper contributes to intuitive design of e-commerce websites with a number of new approaches.

Voice recognition is a research stream within the HCI discipline which conducts computational studies of emotion in speech. Various physiological changes related to emotion are believed to affect speech. Accordingly, the researcher attempted to infer vocal signs of emotion. In general, physiological arousal affects measures related to voice characteristics, such as intensity, mean voice pitch, and speech rate (Scherer, 1979). Voice acts as the barometer of human emotion while the pitch of the voice correlates with certain states of feeling (Darwin, 1872). The investigators conducted this research for marketing purposes in cooperation with researchers in the field of human–computer interaction to analyze consumer emotion using a novel method, the Slogan Validator.

Following this introduction, the second section gives a summary and evaluation of different methods of measurement in emotion research. The third section introduces the research methodology. The fourth section offers results and discussion, and the final section concludes with implications, research limitations, and suggestions for further research.

A summary of different measurement methods in emotion research

Two main types of methods, self-report and psycho-physiological measures, have been used to measure emotions. Self-report measures capture contemplative reflections about the emotions felt with respect to a consumption experience or an advertising stimulus. In contrast, psycho-physiological measurements focus on continuous emotional reactions that higher cognitive processes do not distort (Poels & Dewitte, 2006).

Self-reported measurements

Advertisers frequently employ self-report measurements to assess emotional responses of the consumer to advertising stimuli or consumption-related experiences by recording the respondent's subjective feelings. According to Stout and Leckenby (1986), a subjective feeling is

the consciously felt experience of emotions as described by the person. Generally, three kinds of self-report methods measure subjective feelings: visual self-report, verbal self-report, and moment-to-moment rating. Self-report scales of subjective experiences have been the most frequently used measures in emotion research.

Practitioners and scholars consistently utilize self-report measures (Mehta & Purvis, 2006; Poels & Dewitte, 2006) for several reasons. First, self-report measures measure emotional responses quickly and are user-friendly. Second, they do not require complicated techniques or programs. Third, this technique is practical for measuring emotional reactions to a comparatively large set of advertising stimuli. Thus, consumers can complete a self-report measure easily and quickly at little cost to the advertiser, which makes this technique ideal when doing large-scale research.

However, self-report measures still suffer from a significant drawback involving cognitive bias. Consumers generally behave intuitively and emotionally without conscious awareness (Pawle & Cooper, 2006). Winkielman et al. (2005) provided evidence for the existence of emotions, which can affect behaviour without the subject consciously experiencing them. Consequently, self-report measures assessing subjective feelings may not always record emotions accurately, although these emotions may significantly affect one's decisions (Hazlett & Hazlett, 1999; Chamberlain & Broderick, 2007). In addition, privacy concerns may decrease participants' willingness to disclose their real feelings particularly about sensitive topics such as income, charity, sexuality, racial issues, gender, and age, leading to inaccurate results (King & Bruner, 2000).

Psycho-physiological measurements

Bagozzi (1991) and Winkielman et al. (2005) reported that emotions combined with reactions are beyond an individual's control. These autonomic responses contain physiological reactions (e.g., increased heart rate, sweating) and facial expressions (e.g., frowning and smiling), which chiefly result from changes in the autonomic nervous system. Oatley (1992, p. 21) stated that at least the "autonomic nervous system and other physiological processes" accompany subjectively felt emotions. Lazarus (1991, pp. 58–59) asserted that "if the criterion of physiological activity was eliminated from the definition, the concept of emotion would be left without one of the most important response boundaries with which to distinguish it from non-emotion". Recent developments provide several techniques to capture an individual's psycho-physiological reactions. The following discussion identifies four well-known psycho-physiological measures in marketing literature on emotions.

Electrodermal analysis

Scientists commonly employ electrodermal activity (EDA) to measure the activity of the autonomic nervous system (Dawson et al., 2000), as the reaction of an individual's skin to a passing current measures the amount of activity (Watson & Gatchel, 1979). Generally, most specialists regard EDA as a reliable and valid measure of arousal (e.g. Kroeber-Riel, 1979; Klebba, 1985) that can allow researchers to recognize the magnitude of a response with accuracy (Klebba, 1985).

Nonetheless, such responses are sensitive to the type of stimuli (Hopkins & Fletcher, 1994; Critchley, 2002). Previous research has warned about employing the electrodermal technique. For instance, poorly chosen placement locations and surroundings can distort the results; therefore, clean and controlled electrode placement is very important for the accuracy of results

(Stewart & Furse, 1982). Measuring and analyzing EDA requires a great deal of practice. This method requires expert set-up and analysis and particularly thorough attention in order to obtain valid results (LaBarbera & Tucciarone, 1995). Furthermore, only measures of arousal that can be either positive or negative in valence rather than EDA can verify the direction or the valence of the emotional responses (Hopkins & Fletcher, 1994). Vanden et al. (1994) found that EDA does not validly measure attention nor does it indicate emotional reactions of warmth to stimuli. Measuring physiological reactions, such as skin conductance, reveals a great deal of personal variation (Ben-Shakhar, 1985). Other factors, such as medication, menstrual cycle in women, and fatigue, can affect EDA measures (Hopkins & Fletcher, 1994). In addition, Cacioppo and Petty (1983) suggested that EDA need to be measured at different times to improve reliability.

Heart rate

An electrocardiogram measures heart rate response by observing the electrical discharges connected to the heart's muscle contractions (Wiles & Cornwell, 1990). The rate of the heartbeat can indicate a range of phenomena, such as attention, arousal, and cognitive or physical effort (Lang, 1990). Previous researchers (e.g. Bolls et al., 2001) have measured heart rate responses to assess pleasant or unpleasant reactions to external stimuli. Lang (1990) revealed that heart rate could be a valid real-time and continuous measure of both attention and arousal that can display reliable results over time (Lang et al., 2002).

Past studies support the capability of heart rate to predict recall and memory (e.g. Lang et al., 2002; Bolls et al., 2003). Additionally, environmental factors do not influence heart rate; thus, this technique is suitable for use in experimental settings outside a laboratory (Watson & Gatchel, 1979). Measurement of the heart rate simply involves placing a device that registers heart rate on one finger, requiring no other involvement with participants. Overall, this method to measure psycho-physiological reactions is easy and inexpensive (Lang, 1994; Poels & Dewitte, 2006).

However, since different phenomena can also affect the heart rate, the results need to be interpreted cautiously. Watson and Gatchel (1979, p. 22) stated that "it is difficult to formulate with any certainty generalizations about this physiological response during a number of psychological processes". This statement reveals the possible risk of simultaneous validity. Since several psychological processes may induce heart rate changes, researchers should be cautious when determining a particular psychological process based on the heart rate interpretation, as relying solely on heart rate to gauge emotional response is not appropriate. Heart rate is best used as a supplementary psycho-physiological technique (Hopkins & Fletcher, 1994).

Facial expression

Electrical signals resulting from the contraction of facial muscle fibres when voltage from electrodes placed on an individual's face passes through them evaluate facial expression (Wiles & Cornwell, 1990). Ekman and Friesen (1975) proposed the Facial Action Coding System (FACS), which codes visible facial muscle movements to measure changes in facial expressions that reflect an emotional experience. Researchers (e.g. Hazlett & Hazlett, 1999; Bolls et al., 2001) have argued that FACS lacks the subtlety to measure the changes in muscular activity that advertising evokes.

Facial electromyography (EMG) is a more precise measure of facial expressions (Cacioppo et al., 1986). EMG can register responses even when participants purposefully restrain their emotional expressions (Cacioppo et al., 1992). Hazlett and Hazlett (1999) compared the results of EMG with self-reports of participants' emotional responses to TV commercials and found

that EMG measures related more closely to brand recall measures. Marketing researchers most commonly employ EMG to measure facial muscle activity (Wang & Minor, 2008).

Nevertheless, facial EMG also has some restrictions. First, electrodes on the participants' faces can make them aware that someone is monitoring their facial expressions. This awareness could make them more conscious about their facial expressions, which may decrease validity. Second, facial EMG needs to be done in unnatural lab settings, which could lead to the problem of ecological validity. Third, facial EMG is also sensitive to noise; for instance, noise could induce unexpected movements by the participants, which may reduce reliability (Bolls et al., 2001; Poels & Dewitte, 2006). Finally, since facial EMG measurement appraises individuals, it is impractical and time-consuming when the subject group is large (Hazlett & Hazlett, 1999).

Brain imaging analysis

Neuromarketing researchers employ comprehensive brain imaging analysis using neuroscience technologies to examine how participants' brains respond to advertising and marketing stimuli. They apply four main techniques for brain imaging: electroencephalography (EEG), magnetoencephalography (MEG), positron emission tomography (PET), and functional magnetic resonance imaging (fMRI) (Plassmann et al., 2007). MEG, PET, and fMRI are comparatively new approaches in marketing research which monitor radioactive patterns or magnetic activity in the medial prefrontal cortex of the brain. They can document a participant's brain activities in response to non-static stimuli by presenting high spatial and temporal resolution images (Rossiter et al., 2001; Berthoz et al., 2002). Therefore, these three approaches complement less accurate measurement techniques, such as EEG (Rossiter et al., 2001; Wang & Minor, 2008).

A number of advertising researchers have recognized the importance of the latest developments in neuroscience (Vakratsas & Ambler, 1999; Hall, 2002; Du Plessis, 2005). Since the 1990s, practitioners and marketing researchers have been intensively applying brain imaging analysis techniques in field examinations of advertising effectiveness, brand loyalty, product preferences, and the like (Helliker, 2006). Because external disturbances and participant bias do not largely affect the procedures, marketers consider these techniques more efficient compared to other psycho-physiological methods, as well as more precise than surveys and focus groups to gather consumer feedback (Kelly, 2002).

However, brain-imaging techniques require specific expertise and a longer time to collect data, not to mention the fact that they are also very expensive (Plassmann et al., 2007). Additionally, critics have been increasingly challenging the use of brain imaging analysis on ethical grounds, pointing out that it invades privacy and can potentially become a form of mind control (Wahlberg, 2004). Therefore, future marketing researchers must take the necessary steps to protect participants from ethically questionable techniques (Wang & Minor, 2008).

Overall evaluation of psycho-physiological measurements

The objective measurement of psycho-physiological reactions provides valuable insights that researchers can apply when examining the correlations between consumers' conscious emotional responses and subconscious psycho-physiological emotional responses (Chamberlain & Broderick, 2007). When used together, self-report measures and psycho-physiological measures can help avoid biases resulting from respondents' characteristics or surrounding disturbances (Wiles & Cornwell, 1990; Wang & Minor, 2008). By employing both techniques, researchers can gain a deeper comprehension of the emotional construct.

However, experimenting with psycho-physiological approaches for marketing and advertising purposes has applicability, validity, and reliability problems. In addition, psycho-physiological measures require trained experts and a longer time to collect the data. The brain imaging analysis technique is also a very costly approach.

An alternative approach in emotion research – the Slogan Validator

Several marketing studies cooperated with the fields of psychology and neuroscience to study emotion (Chamberlain & Broderick, 2007), but to date, no one has collaborated with researchers in the field of human–computer interaction with voice recognition. Since the 1980s, little research has related voice pitch analysis to marketing studies (Wang & Minor, 2008). Compared to other psycho-physiological techniques, voice pitch analysis has at least two notable advantages for marketing research. The experimental procedure requires only oral responses entailing only the use of audio recording equipment instead of large, bulky machinery; this kind of equipment, when used in controlled and unnatural experimental settings, is less likely to influence individuals, as the recording apparatus is not as noticeable or intrusive (Klebba, 1985).

This research therefore recommends a different approach for analyzing voice expression and emotions to provide marketing researchers with a simple and easy-to-operate computer-based tool for evaluating emotions embedded in advertising slogans.

3 Research methodology

The Slogan Validator

According to Ohala (1996), vocal communication transmits several types of non-verbal information: the regional accent, age, gender, identity, health condition, and emotional state of the speaker. Relatively few attempts have been made to develop computer-based tools specifically for the evaluation of advertising slogans mainly because only a few computer scientists participate in marketing, and more specifically, advertising slogan research. Questionnaire analysis is the most common method of assessing slogans (e.g. Dotson & Hyatt, 2000; Supphellen & Nygaardsvik, 2002), although it is not necessarily the most effective. Signal-based evaluation tools address some of the limitations of the questionnaire approach. For example, signal data captures and analyzes speech signals in slogans and their underlying emotions. This method gathers information more naturally than does the consumer memory-based data collected via questionnaire.

The Slogan Validator was developed by researchers in the Department of Computer Science and Engineering at Tatung University, Taiwan, also known as human–computer interface, that recognizes five primary emotions in Mandarin speech: happiness, anger, sadness, boredom, and neutral (unemotional) (see Figure 17.1). Several international journals published articles on this interface, which received considerable recognition in the computer science field (see Box, p. 319).

Research design

Previous studies (e.g. Hazlett et al, 1998; Hazlett & Hazlett, 1999) conducted psycho-physiological investigations of emotions (EMG measures) and found that facial EMG measures are a more precise, quantitative, and valid measure of emotional response to advertising commercials. This study was interested in comparing advertising slogans on emotion measures of Slogan Validator and self-report. Therefore, this study's hypothesis was that the Slogan Validator measures would be more a sensitive discriminator between advertising slogans than self-report measures.

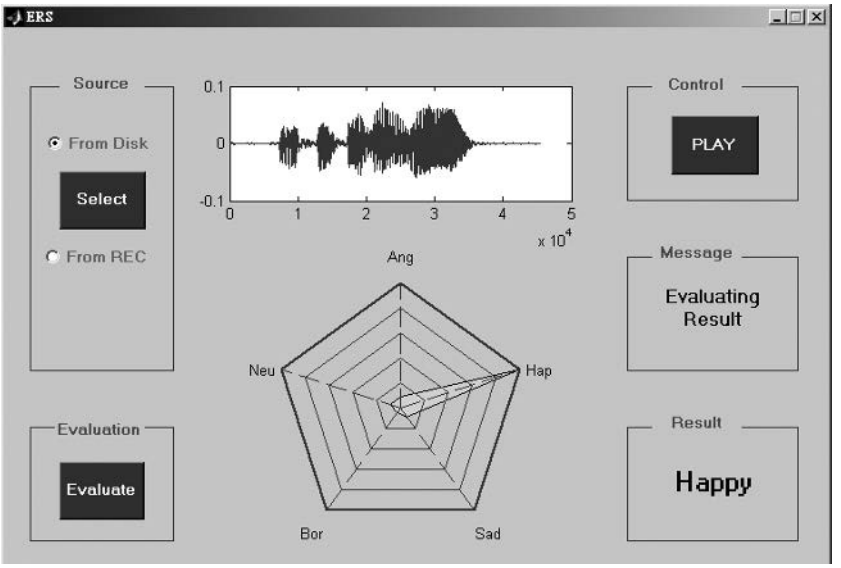


Figure 17.1 Representation of a screenshot [Graphical User Interface (GUI) of the Slogan Validator

Some publications of related research by participating researchers

Jun-Heng Yeh, Tsang-Long Pao, Ching-Yi Lin, Yao-Wei Tsai, and Yu-Te Chen, "Segment-Based Emotion Recognition from Continuous Mandarin Chinese Speech," Computers in Human Behavior, Vol. 27, pp. 1545–1552, 2011. (SSCI)(IF: 1.865)

Tsang-Long Pao, Yu-Te Chen and Jun-Heng Yeh, "Emotion Recognition and Evaluation from Mandarin Speech Signals," International Journal of Innovative Computing, Information and Control (IJICIC), Vol.4, No.7, pp. 1695–1709, July 2008. (SCI Expanded)(IF: 0.724)(57/85)

Stimuli

Four advertising slogans, of which two belong to the car industry and two belong to fast food chains were chosen in this study: Lexus' "The pursuit of perfection!"; Volvo's "Which of you deserves a Volvo?"; McDonald's "McDonald's is all for you!"; KFC's "All in KFC is delicious!". This study selected these four slogans because they all belong to world renowned and long-established brands that are familiar to Taiwanese consumers.

Research procedure and sample

The first researcher was trained by experts in the Department of Computer Science and Engineering at Tatung University, thoroughly discussing with them any critical issues that needed to be considered with regard to the recording process. The researcher then designed the instructions for this experiment. Feedback was sought from four key academics in the fields of marketing, consumer behaviour, and computer science.

This section summarizes the laboratory experimental design for this study. The experiment required a quiet and comfortable place in order to make the participants feel comfortable and

relaxed. The interviewer asked general questions about advertising slogans (e.g. "What are your opinions about advertising slogans in general? What are the reasons for your answers? When you hear an advertising slogan, do you feel any emotion?"). These general questions gave participants time to become familiar with the research topic, thereby reducing any anxiety they may feel. Next, the interviewer explained the critical issues of this research: the objective of recording, the confidentiality of this research (giving consent forms to the participant), and the entire process of recording and completing the questionnaire.

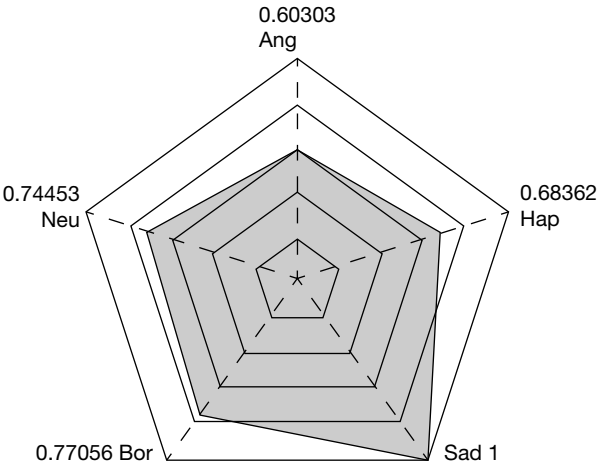
The participants were then invited to the audio recording room. Then, the interviewer explained the use of the microphone. The distance between the participant and microphone should be about a fist in length. After the microphone was in position, the interviewer left the audio recording room and asked participants to follow the following instructions: (1) the participant must say the four slogans aloud; (2) every slogan needs to be spoken three times with a three-second interval between each; and (3) after finishing the recording, the participant must inform the interviewer. The interviewer then re-entered the recording room, stopped the recording software, and saved the participants' recordings of the slogans in a particular file. The interviewer asked participants to leave the recording room and sit outside in the waiting area where they should perform the following: (1) fill out the traditional questionnaire and (2) inform the interviewer when they finish. Finally, the interviewer thanked participants for their cooperation and gave them an incentive valued at £2. The entire process took about thirty minutes to complete.

Before commencing the formal experiment, several pilot tests were conducted. Overall, 37 female and 39 male subjects comprising a mix of postgraduate students and workers (e.g. salespeople and librarians) participated in the experiment. The research was carried out over a period of three months.

The subjects were asked to use two methods: self-report questionnaires and the Slogan Validator. Most subjects responding to the fast-food chains slogans were 18–29 years old (71.1%), followed by 30–39 years old (21.1%), and finally 40–49 years old (7.9%). Similarly, for the cars advertisements, most subjects were in the 18–29 years old age range (72%), followed by the 30–39 years old age range (20%), and lastly 40–49 years old age range (8%). Regarding the gender profile of the participants, 48.7% of females and 51.3% of males responded to the fast-food chains version and 48% of females and 52% of males responded to the car version.

Results and discussion

Analysis of variance (ANOVA) tests were conducted in order to test whether the different advertising slogans within each product category resulted in discernible differences in emotional responses. Figure 17.2 shows an example of Slogan Validator results and Figure 17.3 shows an example of a self-report questionnaire. Since participants needed to speak out slogans three times, this study compared first time emotion score and average emotion score on Slogan Validator measures and self-report measures. For the Lexus and Volvo slogans, results of self-report measures both for first time emotion and mean score of emotion were found to be not significantly different between slogans. Nevertheless, results of Slogan Validator measures both for first time emotion and mean score of emotion – happy emotion (em1) and angry emotion (em3) were found significantly different between slogans (Table 17.1). Similarly, for the McDonald's and KFC slogans, results of self-report measures both for first time emotion and mean score of emotion were found not significantly different between slogans. However, results of Slogan Validator measures for the first time emotion of happy emotion (em1) and sad emotion (em2) were found significantly different between slogans. Results of Slogan Validator measures for the mean score of emotion of sad emotion (em2) were found significantly different between



Hap: 0.68
Ang: 0.6
Sad: 1
Bor: 0.77
Neu: 0.75

Figure 17.2 Representation of a screenshot [Examples of Results – a Display of Slogan Validator]

Please say aloud once: "*McDonald's is all for you!*" How much emotion did you experience at this point when you were saying this advertising slogan aloud?

Not at all happy	1	2	3	4	5	Very happy
Not at all angry	1	2	3	4	5	Very angry
Not at all sad	1	2	3	4	5	Very sad
Not at all bored	1	2	3	4	5	Very bored
Not at all neutral	1	2	3	4	5	Very neutral

Figure 17.3 The questionnaire introduced the emotion in the above way

slogans (Table 17.2). Overall, Results of ANOVA tests show that the Slogan Validator measures were a more sensitive discriminator between advertising slogans than self-report measures. The results of this experiment support our hypothesis.

Additionally, previous researchers (e.g. Baggett et al. 1996; Calvo & Cano-Vindel, 1997; Calvo & Eysenck, 1998; Hazlett & Hazlett, 1999) have also revealed discrepancies in subjective and objective measures. Therefore, inconsistencies between the results of subjective and objective measures are not surprising. Self-report measures provide only information about the subjective experience of emotions. Critics always accuse them of eliciting rationalization in respondents and discouraging spontaneous responses (Hupp et al., 2008). Winkielman et al. (2005) verified the existence of emotions that influence people's behaviour without their conscious awareness. Researchers (e.g. Chartrand, 2005; Zaltmann, 2003) found that individuals are not normally fully conscious of their actions, behaving spontaneously in many circumstances and processing

Table 17.1 Analysis of variance for self-report and Slogan Validator measures by category – cars

ANOVA (Cars)	*df*	*F*	*Sig*
SRem1(first time emotion)	(1)	1.18	0.28
SRem2(first time emotion)	(1)	0.05	0.83
SRem3(first time emotion)	(1)	0.16	0.69
SRem4(first time emotion)	(1)	0.47	0.49
SRem5(first time emotion)	(1)	1.33	0.25
SRem1(mean score of emotion)	(1)	1.80	0.18
SRem2(mean score of emotion)	(1)	0.02	0.88
SRem3(mean score of emotion)	(1)	0.01	0.94
SRem4(mean score of emotion)	(1)	2.48	0.12
SRem5(mean score of emotion)	(1)	0.35	0.55
SVem1(first time emotion)	(1)***	12.37	0.00
SVem2(first time emotion)	(1)	0.10	0.76
SVem3(first time emotion)	(1)***	13.00	0.00
SVem4(first time emotion)	(1)	0.77	0.38
SVem5(first time emotion)	(1)	0.07	0.78
SVem1(mean score of emotion)	(1)***	8.37	0.00
SVem2(mean score of emotion)	(1)	0.28	0.60
SVem3(mean score of emotion)	(1)***	9.25	0.00
SVem4(mean score of emotion)	(1)	0.37	0.54
SVem5(mean score of emotion)	(1)	0.01	0.93

SR: Self-Report measures, SV: Slogan Validator measures, em1: happy emotion, em2: sad emotion, em3: angry emotion, em4: bored emotion, em5: neutral emotion *p<0.10, **p<0.05, ***p<0.01

information automatically. Self-report measures offer a critical entry point into the world of subjective experience within the realm of emotions. Some specialists, however, criticize them for inducing rationalization in respondents and discouraging spontaneous responses (Hupp et al., 2008).

The results from this study reveal that the Slogan Validator measures were a more sensitive discriminator than self-report measures. Its application is uncomplicated and inexpensive compared to other psycho-physiological techniques in marketing research. Although the technology behind the Slogan Validator is still at an early stage, the preliminary results reveal that this approach nonetheless takes the first steps on a path that may lead to an increasingly effective advertising copy strategy.

Conclusions

Methodological and managerial implications

Prior research (e.g. Oatley, 1992; LeDoux, 1996; Babin et al., 1998; Bagozzi et al., 1999) indicated the need for emotion research to go beyond self-report measures and called for collaboration with other research fields (Lee et al., 2007) in order to further the study of consumer behaviour and emotion in marketing. This research investigated the emotions in consumer voice recordings in collaboration with researchers in the field of human–computer interaction.

Experimental studies in marketing and advertising using psycho-physiological measures still encounter several applicability, validity, and reliability problems. The Slogan Validator is a human–

Table 17.2 Analysis of variance for self-report and Slogan Validator measures by category – fast food chains

ANOVA (Fast Food Chains)	*df*	*F*	*Sig*
SRem1(first time emotion)	(1)	2.55	0.11
SRem2(first time emotion)	(1)	0.01	0.92
SRem3(first time emotion)	(1)	0.01	0.92
SRem4(first time emotion)	(1)	1.16	0.28
SRem5(first time emotion)	(1)	0.31	0.58
SRem1(mean score of emotion)	(1)	1.35	0.25
SRem2(mean score of emotion)	(1)	0.02	0.88
SRem3(mean score of emotion)	(1)	0.07	0.80
SRem4(mean score of emotion)	(1)	0.91	0.34
SRem5(mean score of emotion)	(1)	0.00	0.97
SVem1(first time emotion)	(1)*	2.98	0.09
SVem2(first time emotion)	(1)**	5.04	0.03
SVem3(first time emotion)	(1)	1.94	0.17
SVem4(first time emotion)	(1)	1.77	0.19
SVem5(first time emotion)	(1)	0.19	0.67
SVem1(mean score of emotion)	(1)	2.18	0.14
SVem2(mean score of emotion)	(1)*	3.44	0.07
SVem3(mean score of emotion)	(1)	2.48	0.12
SVem4(mean score of emotion)	(1)	2.07	0.15
SVem5(mean score of emotion)	(1)	0.30	0.59

SR: Self-Report measures, SV: Slogan Validator measures, em1: happy emotion, em2: sad emotion, em3: angry emotion, em4: bored emotion, em5: neutral emotion *p<0.10, **p<0.05, ***p<0.01

computer interface, specifically a speech signal-based evaluation tool, which can analyze elicited emotions from signal data and offer a more natural way to analyze individual emotional responses. Utilizing this technique requires oral responses and audio recording equipment, making it a comparatively uncomplicated and unobtrusive method. In comparison to other psycho-physiological techniques, it is also a more cost-effective method for marketing research.

In the future, when the Slogan Validator improves in technical terms by gaining the ability to recognize more emotions and decrease sensitivity to noise, individuals could carry portable models around while watching advertisements and saying slogans aloud. Capturing this real-time data will be very valuable for researchers and particularly for time-based management studies.

The Slogan Validator will also provide marketers with an alternative way of measuring individuals' emotions from their voices, possibly employing it in the real purchase environment or on the phone in call centres. This technique has a promising future and is likely to shed a new and fascinating light on the understanding of the ways in which emotions affect advertising and consumption behaviour.

Limitations of the research and further research

Because of the preliminary nature of this experiment—our subject sample was limited in size and scope—the results of this study may not generalize to other samples. Additionally, the

selection of advertising slogans was not comprehensive, and the results of of this experiment may not generalize to other advertising slogans.

The Slogan Validator can recognize only five basic emotions, which critically constrains this study. In addition, this study was conducted in a laboratory setting. As Lazarus (1995) pointed out, it is difficult to evoke emotions in such a setting. Even if the subject can produce the right emotion, a reliable study may not be possible if its intensity is lower than it would be in a natural setting. Researchers at the Tatung University are trying to develop further techniques to recognize more emotions that would suit advertising research better, as well as attempting to reduce the noise sensitivity of the Slogan Validator. If they can decrease its sensitivity, they could collect participants' voice data in a room close to a real consumption environment.

An additional limitation of the present study relates to the tested slogans. Specifically, this study chose the advertising slogans of four well-known brands. However, it could not be avoided that the participants might already have their own opinions about the brands and/or slogans before filling out the questionnaires; this might influence the results to a certain extent and produce bias. Further research therefore would be advised to employ fictitious advertising slogans which are entirely new to participants with the aim of reducing bias in this aspect. Furthermore, only one version of an advertising slogan was used for each brand, whereas in fact the tested brands might use various advertising slogans in their advertisements. Individuals' emotional reactions to other slogans within the same brand might be distinguishably different from each other. This represents another issue that future research could usefully address.

Further research will benefit greatly if the technology improves. As Ambler (2000) stated, researchers must consider, not overlook, the difficulty of measuring emotions. Future research should therefore try to use other psycho-physiological measures to obtain valid and reliable results with the aim of generating a deeper understanding of the construct of emotions.

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Part IV

New methodological insights in scholarly research in the field

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18

Memes, memetics and marketing

A state-of-the-art review and a lifecycle model of meme management in advertising

Noel Murray, Ajay Manrai, and Lalita Manrai

Abstract

The concept of the "meme" has promised to transform our understanding of culture in the same manner as the gene has transformed our knowledge of biology. Yet, memetics has failed to live up to its promise of delivering a more complex and complete model of culture. This paper addresses why the science of memetics has failed to live up to its early promise. It assesses memetics' contribution to explanatory targets of culture, marketing and advertising. The paper analyzes why memetics has received a more positive reception among physical and mathematical sciences than from the social sciences. The social sciences have not been especially receptive to memetics' two over-arching theoretical metaphors of genetics and of viruses of the mind. Nonetheless, a review of popular and successful social media campaigns reveals the popularity of viral themes in the construction of these campaigns. The paper argues that memetics would benefit from the development of a propositional network of empirically testable hypotheses. A lifecycle model of meme management is developed and several testable propositions for memetics in advertising contexts are offered. Finally, we evaluate the prospects for memetics in marketing and call for new theoretical approaches to memetics that rely less on biological, deterministic models of behaviors, and which draw from recent trends in the literature of sociobiology and cultural transmission. The integration of these new theoretical developments into memetics will allow for the integration of cognitive models, in a new and more open model of memetics.

Key words

Meme, Memetics, advertising, popular culture, viral campaigns, social media, memetic drive, meme fountains, lifecycle model, media celebrities, cultural evolution.

Introduction

The concept "meme" has garnered considerable attention in popular culture and marketing (Sax, 2012). Memetics, the science of memes' greatest currency, is on the World Wide Web,

popular bookstores, and among advertising and public relations professionals. The promise of memetics is that it will offer us an understanding of why some theories, ideas, fashions, products, brands, advertising slogans, or personalities take off and become popular, while others merely languish (Williams, 2000). Yet, for all the attention to memes in popular culture, the associated science of memetics has struggled to prove that it has the potential to become a progressive research paradigm (Aunger, 2000). To date, the science of memetics has failed to gain widespread traction, particularly among social scientists, who have largely not been receptive to memetics' origins in evolutionary theory (Block, 2000; Kuper, 2000). Our paper addresses this conundrum.

First, we assess the role of memes in marketing and advertising. Next, we review the development of memetics theory, originally speculated upon by Richard Dawkins in his influential book, *The Selfish Gene* (Dawkins, 1976/2006) and later popularized by Susan Blackmore in *The Meme Machine* (Blackmore, 1999). Then, we evaluate memetics' contribution to its most important explanatory targets – culture, marketing and advertising (Gelb, 1997). We examine why memetics has had a more positive reception from biological scientists than from social scientists. Next, we develop a propositional network for memetics in advertising by offering a lifecycle model of memes in advertising. Lastly, we assess the prospects for memetics and memes in marketing and advertising and offer suggestions for future research.

Memes and marketing practice

The term "meme" as it is widely employed in marketing and popular culture has become a catchall for freely copied and amusing online content (Gunders & Brown, 2010). More technically, a meme is a cultural unit or expression that is passed on to another person or group. Memes have become an asset for brands, because like celebrities, they have a built-in audience that recognizes and appreciates them (Sax, 2012). With the growing popularity of cultural branding among advertising agencies, marketers increasingly look to YouTube and other social media sites for viral content to latch on to, and to appropriate for their marketing campaigns (Holt, 2004). Mining popular memes is key to applying a cultural strategy model to branding (Holt & Cameron, 2010). Holt and Cameron describe how for a successful cultural branding advertising campaign for *VitaminWater*, secondary sources in popular culture were critical. The *VitaminWater* marketing campaign, for example, initially appropriated art world design codes and memes to create an image of sophisticated choice. Recent television campaigns for *VitaminWater* have directly appropriated a series of YouTube Internet memes in a single television commercial. Several popular Internet memes were appropriated for the advertising campaign, including: (1) a disheveled, twenty-something man in a cardigan walking down a street followed by (2) Sexy Sax Man belting out a tune. Next, Cardigan Man passes someone (3) "planking" on top of a fire hydrant, while another (4) person is doing the "worm" on the sidewalk, followed by (5) cats with limes on their heads. Next, Sexy Sax Man (6) is ploughed over by an antelope, before riding off through (7) a crowd of dancing prisoners in orange jumpsuits into a (8) sunset of Pop-Tarts making double rainbows in the sky.

Indeed popular YouTube memes may compete with iconic celebrity endorsers to earn substantial licensing fees for their originators (Sax, 2012). Startup companies, such as Viral Spiral, employ teams of researchers who scour the Internet for suitable memes for corporate brands such as Nike, Nokia, and Lipton. Occasionally, an advertising campaign will become so popular that it generates its own meme. A recent Old Spice multimedia campaign is another case that illustrates the potential power of advertising memes.

The multimedia campaign titled "The Man Your Man Could Smell Like" began with a traditional media splash during the 2010 Super Bowl Championship Game. The advertising

campaign featured former NFL wide receiver, Isaiah Mustafa, standing in a bathroom delivering a fast-paced monolog, as the green-screen scenery transformed from a bathroom to a scene with the actor sitting on top of a horse. Both the online and the television advertising campaign were produced by the Wieden and Kennedy advertising agency (Axon, 2010). Leveraging the traditional media campaign, Old Spice launched an online marketing campaign linking real-time exchange between Mustafa and the audience through online communities including YouTube, Twitter, Facebook, Reddit, and Digg. The YouTube audience-reply videos received up to 340,000 views for replies to Perez Hilton's and Ellen Degeneres' comments. Over 236 million YouTube views were registered for the entire campaign. Sales for Old Spice increased initially by 107% (Bullas, 2011).

The Old Spice Mustafa meme shared many attributes associated with successful meme-based marketing campaigns. The original YouTube videos were short, often less than one minute in length. The campaign ran in social media channels but employed sponsor-authored social media marketing to spread the brand message. The campaign responded swiftly to tweets, often uploading YouTube video responses in less than a day. The campaign used social media to activate traditional media, including eliciting comments from television daily talk show host, Ellen Degeneres. Finally, the campaign found ways to develop the meme by introducing a rival Fabio campaign meme to extend the narrative.

Meme-based, multimedia marketing campaigns however also suffer from unique disadvantages. Traditional media-based campaigns offer tight control of the message. For meme-based, multimedia campaigns, the sponsor may struggle to maintain control of the message. Indeed, social activists such as Kalle Lasn have written extensively on how "culture jammers" may use low cost Internet-based memes to subvert corporate branding campaigns (Lasn, 2000). The McDonald's Twitter Hash-tag campaign is an example of the latter.

The McDonald's campaign hoped to use the Twitter social media site to elicit heart-warming stories about Happy Meals. Hash-tag-named McDStories, the campaign ran awry immediately; within two hours of launch, the campaign was suspended. The crowd-sourced campaign enabled tweeters, not friendly to McDonald's, to take over authorship of the campaign and to turn the narrative against its sponsor. The democratic structure of Twitter made it impossible for McDonald's to regain control of the message. A sample of the negative tweets included the following (Hill, 2012):

- One time I walked into McDonalds and I could smell Type 2 diabetes floating in the air and I threw up. #McDStories (via Twitter)
- These #McDStories never get old, kinda like a box of McDonald's 10 piece Chicken McNuggets left in the sun for a week (via the LA Times)
- –#McDStories I lost 50lbs in 6 months after I quit working and eating at McDonald's (via *The Daily Mail*)

Several traditional media sources, including the *Huffington Post*, the *Los Angeles Times*, Forbes and the *Telegraph*, covered the backlash to the Hash-tag campaign. Tech popular sites, such as the Next Web and Mashable, also covered the failed Hash-tag campaign. Within days of the campaign's failure, McDonald's stock was down 3%, knocking almost $3 billion off its market value. Twitter Sentiment, the web site reporting on Twitter trending data, reported that 68% of the tweets with #McDStories Hash-tag were negative.

The preceding three cases indicate that multimedia advertising campaigns can be created to increase the probability of an "after-life" for the meme beyond its traditional media life. The idea that an advertising campaign can reproduce itself, albeit in a modified form, is consistent with

the theory and definition of a meme (Gelb, 1997). Before we can more systematically assess the merits of memes and memetics in marketing communications let us first review some key issues in the science of memetics.

Memetics: an overview

Dawkins first drew the analogy between cultural and genetic evolution:

> … it is our own species that really shows what cultural evolution can do. Language is only one example out of many. Fashions in dress and diet, ceremonies and customs, art and architecture, engineering and technology, all evolve in historical time in a way that looks like highly speeded up genetic evolution.
>
> *(Dawkins, 2006: 190)*

Into this "soup" of human culture, Dawkins coins a new term, the "meme", to represent the idea of a unit of cultural transmission, or a unit of imitation. Examples of memes abound in everyday life – tunes, ideas, catch phrases, slogans, clothes fashions, celebrities, car designs, and images. Memes propagate themselves by leaping from brain to brain, via a process of imitation. Dawkins likens this process to the workings of a parasite, which, when planted into a brain, turns the brain into a vehicle for the meme's propagation. Memes with "psychological appeal" have superior survival value. The "psychological appeal" that Dawkins refers to here does not imply a cognitive process in the literal sense; rather, it is a type of fit, or compatibility with our brains. This "process" is shaped by natural selection of genes in gene pools, thus giving rise to a type of meme-gene co-evolution.

Memes replicate through imitation. Dawkins characterizes this imitation in a "broad sense"; he does not use the term in the same narrow manner as scholars in social learning research employ the term (Laland & Odling-Smee, 2000). Not all memes successfully replicate. Dawkins (p.194) suggests three qualities that increase the probability a meme will replicate: longevity, fecundity, and copying-fidelity. Dawkins proposes that the longevity of any *one* copy of a meme is relatively unimportant, having a potential lifespan of the life of the human brain it occupies. From a marketing perspective, however, the longevity of a meme may be quite important, as its continued presence or accessibility in the brain may affect a given consideration set for purchase decisions. Fecundity, as it applies to memes for scientific ideas, for example, may be calibrated at the rate for which scientific articles are cited by other scientific articles. Alternatively, for an advertising slogan, or a catch phrase, fecundity is measured by assessing its spread through the meme pool. Fecundity may be judged by the number of people rehearsing it in their heads; or by the number of consumers activating the slogan when prompted to by a brand name. If the meme is a celebrity, its spread might depend on the celebrity's popularity for a population of media watchers; its survival value approximated by its Q-Score. If the meme is a brand name, a population memeticist may assess fecundity through examination of sales statistics, or via a brand's attachment Q-Rates. In sum, there are several candidate measures in marketing for meme fecundity.

Dawkins acknowledges that "copying-fidelity" may be the most challenging attribute of a meme to understand. Transmission of memes from host to host is subject to continuous mutation, a process Dawkins refers to as "bleeding". The extent of "bleeding" is addressed within the context of a "levels of analysis" problem. For example, one might consider Beethoven's entire ninth symphony a meme, or one may consider a sufficiently distinctive and memorable phrase in the symphony to be a meme. Each "copy" of the symphony meme, from conductor to conductor, undergoes some level of interpretation or bleeding from the original. Dawkins's

model of the brain as a recipient for memes is essentially that of a "black box"; there is little room for cognitive processing or interpretation. We will return to this issue later as it has significant implications for the context of consumer research.

Dawkins also advances the provocative idea that meme-complexes (memeplex) – a collection of memes – evolve in a way analogous to gene complexes. Meme-complexes exploit their cultural environment as part of a larger meme pool and share attributes of an evolutionary stable set. New memes find it hard to invade this stable set. Religion, or an economic ideology, such as Marxism, can function as a meme-complex, each meme-complex having in-built self-defense mechanisms. A committed atheist, Dawkins likens religions to viruses of the mind. Advertising may function similarly; replete with "copy me" instructions, backed up with threats, promises, and ways of preventing their claims from being tested.

Indeed, Williamson, in her classic treatment of the role of ideology in advertising, details many examples of strategies used by advertisers to reduce the probability that their claims will be questioned (Williamson, 1978). First, advertisers create a currency of signs, including signifiers whose form is invisible and therefore is difficult to detect at a conscious level. Signifier and signified are materially inseparable and form a powerful combination to ensure reproduction of the meme. Second, advertising makes extensive use of images of celebrities (the context of denotation) to move ideas into the context of connotation. Once in the context of connotation, the meme is processed automatically, or at a subconscious level, with little opportunity for counter argument (Mick & Politi, 1989). Third, advertising employs extensive use of psychological triggers, such as sex, always hinted at, or referred to, by innuendo, or double entendre, but almost never offered in the "raw". As Williamson demonstrates, even when advertising offers up scientific diagrams and language that seems explanatory, on closer inspection, while images may refer to scientific knowledge, they do not really offer it.

People not only copy memes found in advertising but also copy memes found in the broader popular culture of a consumption-oriented society (Sandilin & Milam, 2008). Memetic driving predicts that people tend to mate with partners who display similar copying ability. People who are adept at copying desirable consumption patterns develop a certain *habitus* that is reflective of their position in social space (Bourdieu, 1984). They also tend to mate with similar others who exhibit similar consumption patterns (Illouz, 1997). Those who perform better at copying ideas are, in turn, more likely to have their ideas/memes copied by others (Corey, 1971). Being powerful in society (and hence acquiring survival value) is associated with being able to copy popular memes.

Dawkins argues that any genes implicated in being good at copying would tend to increase over time. Memetic theory may thus offer one explanation why advertising sales pitches still flourish in a modern scientific culture that rationally rejects the premises upon which they are based (Richard, 1997). Dawkins's central idea of a selfish gene, and humans as but mere meme machines, are controversial (Chesterman, 2005). The selfish gene would appear to deny free will. The concept of consumers as "meme machines" would seem to be at odds with contemporary approaches to the study of consumer behavior, with the latter's emphasis on consumer choice and free will. Dawkins's statement, that in the final analysis "we have the power to turn against our creators (2006, p. 201)" is unlikely to persuade many who have concerns with scientific determinism.

Memetic driving and the celebrity meme in advertising

While Dawkins is credited with introducing the concept of the meme, it is Susan Blackmore who is most identified with popularizing the idea, mapping its outlines, and establishing its

borders (Williams, 2002). Blackmore expands the theoretical framework associated with the school of memetics that views memes as cultural units of information learned through imitation (Blackmore, 1999). Blackmore departs from other meme theorists, such as Lynch, who favor contagion models of memetics, and follows Dawkins's path in emphasizing the replicator role of memes (Lynch, 1998). While Blackmore largely adheres to Dawkins's conception of memes, she differs in that she does not view memes as analogous to genes, but rather sees both genes and memes as examples of a universal replicator. To be considered a replicator, Blackmore argues that something must be capable of sustaining the evolutionary process of heredity (passed on by imitation), variation (degradation and recombination), and selection (people are exposed to more memes than they can remember).

Blackmore proposes the theory of memetic drive to account for the role of memes in culture. Memetic drive represents a form of meme-gene coevolution (Deacon, 1997). Dawkins explains the meme-gene coevolution process in detail in his work on the extended phenotype (Dawkins, 1982). There are three processes involved in memetic drive. First, memetic selection refers to the process whereby some memes survive at the expense of others. For example, new ideas for technological innovation or popular fashions have a higher probability of survival. Second, genetic selection refers to the ability to imitate new memes that bestows on the best imitators a higher reproductive success. Their offspring, in turn, successfully acquire new memes. Third, there is genetic selection for mating with the best imitators. Partners of best imitators enjoy higher survival probabilities. The best imitators are those who possess the memes most valued at a given time. Collectively, the three processes of memetic drive operate together to produce memetic evolution which, in turn, affects the direction taken by genes. The large human brain is one example of the effect of memes driving genes to build superior meme-spreading devices. In memetic driving, natural selection favors genes for learning and imitation. Human brains are especially adept at spreading memes with the characteristics of high fidelity, fecundity, and longevity.

Indeed, Blackmore argues that symbolic reference has produced the only conceivable selection pressure for the evolution of human brains. People who are popular, fashionable, and who come up with creative ideas to solve problems in their physical and social environment tend to have greater social influence (Eagly & Chaiken, 1984). Borrowing a term from Dennett, Blackmore refers to these individuals as meme fountains. Meme fountains are more likely to have their ideas and behaviors imitated than are meme sinks (those who do not retransmit memes) (Cialdini, 1994). Meme fountains tend to have greater cultural capital, their choices being symbolic of, and reflecting greater social status. From an evolutionary perspective, meme fountains are a source of useful ideas that have survival value. It follows that meme fountains are therefore considered to be preferable mates.

Once our ancestors acquired the ability to imitate, memes started driving genes to produce a brain that was especially good at replicating those memes. Memetic drive provides selection pressure for meme fountains. Blackmore contends that human evolution is driven by two replicators, and not just one. Memes and genes coevolve to produce our human brains. The link between these two processes is the meme fountain.

In evolutionary time, meme fountains would be opinion leaders. In the context of contemporary Internet and communications technology, popular culture celebrities represent exemplary meme fountains. Meme fountains are better at imitation and have an evolutionary advantage over meme sinks because meme fountains easily acquire and communicate new skills and artifacts. Meme fountains' ability to copy the latest trends and fashions correlates positively with their social status (Gulas & McKeage, 2004). It will benefit others to copy meme fountains

since they, in turn, are more likely to acquire survival-related memes. Popular culture celebrities thus represent the elite of meme fountains.

In abundant societies, as the objective distance from necessity grows, memes for enhancing one's lifestyle become the product of what Weber calls the "stylization of life" (Weber, 1948). Meme fountains assert their social influence in a systematic commitment that orients diverse practices related to fashions, activities, ideas, media and product consumption (Bourdieu, 1984). Social superiority asserts itself by the claim to the superiority of the ideas of meme fountains. Meme fountains assert "tastes of freedom" in opposition to "tastes of necessity". These tastes are replicated by passing them on to others through imitation, thus sustaining the evolutionary process of the heredity of memes.

In the context of media celebrities, the celebrity meme-complex may be thought of as a system of dispositions including attitudes, fashions, and behavior choices associated with a particular celebrity. The celebrity lifestyle, in turn, operates or is "produced" by the social conditionings associated with it. In this sense, tastes, in the form of manifested preferences, are a practical affirmation of an inevitable difference. Like every sort of taste, the processes of imitation and selection both unite and separate different groups. Meme sinks, on the other hand, function in the system of aesthetic positions as a foil, or a negative reference point in relation to the dispositions of meme fountains. Dissociative market segments – those for which the brand sponsor would prefer not to be associated with their brand – function as meme sinks. The association of, for example, Hell's Angels, with Harley Davidson motorcycles, is likely to decrease the probability of the brand's adoption by consumers who disassociate themselves from the Hell's Angels subculture (Schouten & McAlexander, 1995).

Accounting for the ubiquity of the "sex" meme in advertising

Although Blackmore does not specifically address the role of sex memes in advertising, she does highlight the importance of the sex meme in general (Blackmore, 1999). Sex is ubiquitous in advertising for a broad range of consumer goods (O'Barr, 2011). The sex meme itself is a powerful meme "button" from our evolutionary past (Brodie, 1996). Blackmore argues that our modern sexual behavior is meme-driven and that although basic instincts and desires are still genetically determined, memes are directing the way we respond to sex cues. Sociobiological perspectives on sex drives would argue that genes have set up a system that has worked over evolutionary time (Wilson, 1978). Because genes cannot anticipate the future, they cannot react to rapid environmental changes and therefore may not be ideally suited to today's rapidly changing technological environment. Blackmore cites modern birth control as an innovation that has undermined genetic drives for increasing the population of genes into the next generation. Blackmore acknowledges that our basic instincts and desires are still genetically programmed, but she argues that these desires influence which memes are successful and that the memes themselves now drive behavior.

A sociobiological perspective on sex predicts certain mating patterns (Draper & Harpending, 1988). Advertising copy and visuals often echo these mating patterns (Kilbourne, 1999). Advertising often depicts men as preferring women who are young and fertile, while women are depicted as being attracted to older men of high status. Genetic programming, intended to steer men away from women who may have been pregnant with another man's baby, is echoed in the proliferation of advertising images showing women with very narrow waists (Kilbourne, 1999). Similarly, the beauty ideal of young women with large, clear eyes, smooth skin, and symmetrical features is consistent with a theory of genetic markers that suggests disease is associated with asymmetrical blemishes. Advertising copy, such as a beauty mask ad for the Ann

French product line, which poses the question: "When did your skin last smile back at you?" is an example of a campaign that takes its cue from such genetic folklore (Williamson, 1978).

Blackmore questions however, whether genes that may have historically conferred on males status for hunting, bravery or physical strength have much impact on mate selection in contemporary society. Modern-day memes favor financial earning power, high status cars, expensive clothing, and large houses. Indeed, contemporary research on human mate selection points in the direction of convergence between male and female preferred attributes in potential partners (Buss, 1985). If memes play a role in mate choice then one might see evidence in advertising (assuming advertising reflects a social reality (Pollay, 1986)) depicting males and females being drawn together by attributes more associated with memetic advantage than with genetic advantage. In contemporary times, memetic programming would favor mating with the best meme spreaders. The best meme spreaders wear fashionable clothes, exhibit contemporary music choices, profess popular political views, carry distinguished educational credentials, and have desirable careers. Artistic ability and creativity are sexually selected as a display to attract women (Miller, 1998). Since creativity and artistic output are often ways of copying, using, and spreading memes, they have characteristics of a good imitator. Blackmore goes so far as to suggest that, other things being equal, women prefer a good meme spreader to just a wealthy male. Blackmore also predicts that, since in technologically advanced societies women are expected to spread memes as well as men, we should expect more changes in sexual behavior and mate choice as women play a greater role in spreading memes. Particularly desirable mates would be those whose careers facilitate spreading memes, including writers, artists, journalists, musicians, broadcasters, bloggers, television and film stars.

Celebrities, by definition, are successful meme spreaders. Research indicates that more than 20% of all advertising employs celebrities (Pringle, 2004). Consumers are exposed to more than 5,000 separate brand communications in a given day (Pringle, 2004). The presence of a celebrity in a campaign favors memetic selection. The celebrity, in turn, drives memes for beauty and fashion industries. Evidence suggests that when someone identifies with a celebrity from a physical point of view, they see an enhanced fantasy reflection of themselves in the media, and imitate the behaviors and choices of the celebrity to make the most of their appearance (Pringle, 2004). The churning of celebrities is a critical process for the fashion and media industries. The older celebrity is replaced by new stars as the celebrity archetype is refreshed with younger models from a pantheon of would-be stars. The power of the "copy the celebrity" meme may be seen in a variety of consumption contexts. Sometimes fashion choices that are largely functional adaptations to a subculture environment, such as baggy trousers for skateboarders, become influential memes in the broader environment of popular culture when the skateboarder becomes a celebrity. For personal grooming products, not only do consumers copy the "look" of celebrities, but also personal grooming industry leaders such as Vidal Sassoon may become celebrities themselves.

While genetic driving may have favored enhanced physical attributes and hunting characteristics in males, memetic driving may now be favoring memes associated with the "feminine" side of males. This process is evident in the popularity of such celebrities as Ben Affleck, Tom Hanks, Hugh Grant or Leonardo DiCaprio. Memetic driving is therefore critical for such markets as male personal grooming products. Given the power of the celebrity meme, such memes significantly increase the probability that multimedia advertising campaigns can become viral sensations. If we are prepared to view a celebrity as part of a more complicated meme-complex, incorporating the lifestyle and personal philosophy of the celebrity, then the celebrity meme-complex can potentially become the "glue" to hold an integrated communications campaign together. Moreover, as meme-complexes have their own built-in self-defense mechanisms, the celebrity meme-complex may inure a campaign to criticism.

Modern brand advertising works through horizontal transmission of memes. Before the technology of contemporary mass media was invented, most memes were copied via a process of vertical transmission from parent to child, or via oblique transmission from relatives or clan members to child. There is little opportunity for conflict between memes and genes for vertical transmission. There would also be little need for a theory of memetics since memetic and genetic transmission would be similar. People imitate the most successful imitators. It follows that children and young adults imitate celebrities in mass media. This imitation follows a process of horizontal transmission of memes. Blackmore argues that horizontal transmission of memes dominates in contemporary industrialized societies.

Blackmore: cultural evolution and the technology of meme diffusion

Our main sources of new memes, such as film, television, Facebook, Twitter, YouTube did not exist in our evolutionary past. Today, memes travel faster than in historic times. In hunter-gatherer societies, meme transmission was largely vertical. A meme would be successful if it enhanced the survival value of the individual in terms of enhanced health or longevity, or if it enhanced the survival value of the social unit that constituted the hunter-gatherer group. Digital communication technology favors memes that can transfer quickly from host to host. Contemporary memes, which follow the logic of horizontal transmission, therefore tend not to track genes in the same way that vertically transmitted memes would.

Blackmore also advances the provocative idea that a limited number of archetypal narrative structures and images, anchored around images of money, sex, and power are reworked repeatedly. These archetypes spread from brain to brain with ease since our evolutionary brains are trained to respond to such triggers. The archetype perspective is consistent with the idea that advertising reworks clichés centered around powerful memes. The idea of powerful archetypal narratives structured around eternal myths is not a new one (Campbell, 1972). While response to sexual images may be a genetically programmed trigger, the cultural specificity of the trigger is now driven by memes. We should also expect societal taboos about marriage and sex to weaken as vertically transmitted memes compete with horizontally transmitted memes. With increased global urbanization, global consumers are more likely to pick up memes from mass media and the Internet. Nations that restrict social media sites may retain more cultural taboos. We should therefore expect cultures with the least horizontal transmission to have the strongest cultural taboos. Proxy measures for horizontal transmission may include literacy rates and level of development of Internet and communications technology in a society.

Blackmore also advances the provocative idea that memetic drive leads women to have fewer children. Her argument rests on the assumption that women with fewer children are more likely to work outside of the home. The work environment is more conducive to spreading memes because of the proliferation of communications technology and the increased likelihood that women workers will establish careers in communications industries. A second assumption, is that women are more likely to imitate other women they see in mass media who have (or appear to have) fewer children than their neighbor friends, who have many (Marecek et al., 1978). People are more often persuaded by others who are perceived to be powerful or famous (Brinol et al., 2007). Blackmore argues that family size is no exception to this rule. If successful women have few children then others will copy this meme. Memetic driving in this instance favors the propagation of memes over genes. A couple's desire for dual careers is consistent with the replicating machinery devoted to spreading memes. The increasing number of careers in Internet and communications technology is all part of an environment in which memes thrive, and people are the means of propagation. Indeed, if memes are true replicators in their own right,

then we should expect them to coevolve along with the machinery for their own replication. We should see a drive towards advanced Internet and communications technology societies. Memes should proliferate in social media and marketing communications technology (Caplin, 2012).

Blackmore has been criticized for taking the meme/gene analogy too far (Dennet, 1995). The analogy with genes is problematic if we come to treat the metaphor as if it were a homology (Kuper, 2000). A second concern that social scientists have for memetics is not so much the general idea of memetics, but rather its assumption that culture is made up of discrete, distinguishable units, which have a life of their own (Block, 2000). Others question the utility of Blackmore's behaviorist perspective in denying the existence of a conscious state and people's ability to represent internally ideas and feelings (Pech, 2003). This last criticism would seem to be particularly applicable to the role of memetics in advertising given the importance of constructivist models of knowledge that are prevalent in the field of advertising and in social science in general (Mortimer, 2002). Although there has been a long history of debate in the social sciences on the nature of knowledge, more interactive and constructivist theories of learning have gained wider acceptance. (Kincaid, 1996).

Consumer knowledge has a subjective dimension as well as an objective one. Popular models of consumer behavior integrate cognitive and affective components of product knowledge (Oliver, 1993). This broader conception of consumer knowledge includes empirical perception and rational analysis; it involves building knowledge structures; it is holistic rather than atomistic. This concept of knowledge highlights the fluid and dynamic nature of knowledge and poses challenges for memetics scholars (Chesterman, 2005). Memeticists would counter that memetics was never intended however to address all types of knowledge; Blackmore, for example, focuses only knowledge transferred or learned by memetic imitation (Blackmore, 1999).

Critics have argued that we need to move away from general discussions of memetics and apply these terms to real contexts (Pocklington & Best, 1997). In marketing, advertising would seem to be the most fruitful field for theoretical development and application (Gelb, 1997). Future research will need to focus more on developing memetic models to specify some mechanisms and relationships which bring about correlational associations, even if those associations are potentially explained by other theoretical models (Hull, 2000).

A lifecycle model of meme management

In advertising, one useful approach would be to develop a memetic model based on a propositional network for predicting meme success in advertising. We draw on and extend Bjarneskans' lifecycle model of memes for this endeavor (Bjarneskans et al., 2005).

Our version of the lifecycle model of memes incorporates six basic stages (see Figure 18.1). These are:

- *Transmission*: Memetic engineers encode memes in an information-carrying medium such as television commercials, print advertisements, or YouTube viral videos. *Knowledge is expressed*.
- *Decoding:* The host perceives the meme. A message-carrying medium exposes a host's brain to a meme. *Knowledge is received*.
- *Infection:* The meme takes up residence in the host's brain (mental structure). *Knowledge is processed*.
- *Storage:* The meme is stored in the host's brain's long-term memory. *Knowledge is saved*.
- *Survival:* The meme successfully fights off counter-memes. *Knowledge is retained*.
- *Retransmission:* The meme is retransmitted from the host's brain to the brains of other hosts. *Knowledge is spread*.

There are a number of questions that advertising practitioners might have in using this model to manage memes in advertising. Which memes are selected for transmission? What are the selection criteria for successful memes? What factors favor the spread and survival of memes? We offer the following propositional network for advertising practitioners based on memetic theory. Some of the categories below are adapted from Chesterman (2005).

To encourage meme transmission:

- Fecundity: The more copies of the meme, the more successful is the advertising campaign. Extend the life of traditional media advertising with freely available Internet copies/YouTube copies. Link and/or associate advertising with social media, mobile applications, blogs, and other viral marketing elements (Meerman-Scott, 2011)
- Copying Fidelity: Mutation can degrade a meme. Since celebrities in advertising are themselves memes, seek endorsement exclusivity so that the celebrity meme is not degraded with the memes of other brands. Ensure that Internet video copies of the advertising campaign are not degraded in video or audio fidelity. Closely monitor and enforce trademarks and other intellectual property such as product designs.
- Simplicity: Simple, catchy tunes, slogans and taglines spread faster. The New York marketing campaign for the "The Big Apple" or Hong Kong's "The City of Lights" are examples of simple memes.
- Primordial drives: Memes connected to primordial drives of fear, food, and sex are hardwired to attract attention (Brodie, 1996). For example, the sex-for-power meme is prevalent in advertising; it includes themes of romantic dominance, psychological dominance, and physical dominance (Williamson, 1978).
- Memetic engineer: The memetic engineer is the creator of the meme. Creative talent at advertising agencies fulfills the role of memetic engineers. Therefore, investing in the highest quality memetic engineers is likely to result in the production of high quality memes that transmit successfully.
- Repetition: New hosts may require a minimum effective frequency of exposure to acquire a new meme.
- Durable media: Radio and television are ephemeral media compared to print. Higher levels of meme mutation will occur in synchronous media such as television and radio because they are less durable.
- Vector technology fit: The vector is the impartial medium used to transport the meme to hosts. Memes spread better if they can reach different types of hosts via different types of media. A short text meme is easy to transmit via Twitter. An image meme can transmit via Instagram. Traditional media, supplemented by social media, are likely to transmit memes to a variety of hosts, thus increasing the probability of meme infection. Memes have a parasitic relationship to their vectors. Therefore, memes that are compatible with new, popular vectors, such as Instagram, are more likely to transmit successfully. Similarly, promotional campaigns, tailored to specific vector technologies, such as Twitter, are more likely to be successful.

To encourage meme decoding:

- Visibility: Tailor media vehicles to enhance meme visibility and to break through the clutter of competing memes. Billboards featuring faux-three-dimensional images, digitally imaged logos superimposed on football fields, aircraft banner advertising on beaches, are all examples of media (vectors) that enhance meme visibility.

- Meme-complex fit: Memes that are consistent with a host's existing meme-complex are more likely to be decoded. If the target host is already infected with the meme-complex of the celebrity lifestyle, then the use of a celebrity will increase the probability that a product meme will be decoded.

To encourage meme infection:

- Degree of fit: Memes are more contagious if they fit with a host's existing meme-complex.
- Baits: Memes are more contagious if they promise quick payoff e.g. Nigerian emails, or limited time promotional offers.
- Originality: A meme has a higher probability of infecting a host if the meme is a novel separate unit, distinct, and repeatable. Advertising must be sufficiently original to constitute as something worth reception by the host.
- Digestible: Is the unit length of the meme sufficiently short that it can be retransmitted without the need for external storage? The unit length of a catchy advertising jingle or a slogan must be sufficiently short that it is digestible.
- Simple: Is the meme sufficiently simple that it can be understood without the need for repetition?
- Threats: memes are more contagious if they carry a threat. Brody argues that because of underlying, evolutionary drives, memes associated with some sort of fear will be more memorable and more effective (Brodie, 1996). Public service announcements ads often carry dire warnings of harm (Whitehall-King & Reid, 1990). Problem/solution advertising is a milder type of threat-based advertising strategy that has been successfully employed (Percy & Rossiter, 1992).

To encourage meme storage:

- Assimilation: Can the meme be absorbed into an existing meme-complex? For example, a product meme for a zero calorie sweetener may not succeed in China where a meme-complex for healthy living does not include a conception of calories.
- Elaboration: Does the meme have sufficient novelty value to cause the host to cognitively process it, or for the host to be emotionally invested in the meme? Note that employing existing YouTube-popular-culture-meme-sensations in traditional advertising may be one way to accomplish this (Sax, 2012). Novel executions of traditional television commercials (meme vehicles), such as the "Old Spice" campaign discussed earlier, increase the probability of meme storage.
- External storage: The availability of external storage technology increases the probability of meme repetition by the host and the probability that the host will retransmit the meme to other hosts. Viral videos that permit downloading files, or storing links to files in personal computers or cell phones, increase the probability of external storage.

To encourage survival in host:

- Immunity: Immunity to counter-memes occurs when the meme has its own built-in defense mechanism. Advertising often transmits memes in the context of connotation, thereby having an in-built immune mechanism making it difficult for the host to reject the logic of the meme. The advertising strategy of puffery also has a built-in immune defense mechanism (VandenBerg & Reid, 1980). One might expect this immunity effect to be stronger for visual puffery (Toncar & Fetscherin, 2012).

- Sociotype fit: The sociotype is the meme's expression within the social and cultural environment in which the memotype or actual expression of the meme exists. The sociotype is the particular way the meme is understood and enacted in a specific culture or subculture. If memes are consistent with the sociotype, they provide a context for other memes, and increase their own probability of survival. Note, sociotypes are culturally contingent. Memes carried in advertising vehicles in Confucian cultures may need to follow meme-complexes universally popular in Confucian cultures, such as respect for elders and the importance of maintaining harmonious relations in society (Lin, 2001). Memes, such as the fashion meme "do not wear white after Labor Day" are unlikely to survive outside North America.

To encourage meme retransmission:

- Hooks: A meme carries a hook if it brings positive feedback to the hosts when the host retransmits the meme to other hosts. The hook is the connector that attracts the host to the meme. Examples might include the wearing of fashionable clothes, a behavior which transmits to other potential hosts that the meme carrier has a suitable meme to imitate. The public service announcement campaign "Marijuana is a gateway drug" is an example of a hook, since it spreads the meme that while marijuana itself may not be dangerous, its use will lead down the path to consumption of more harmful substances. Hosts who are frequently imitated by other hosts, among other positive feedback, can expect to have increased mating opportunities. In the context of a music meme, the "hook" is the chorus, a catchy refrain that is retransmitted from host to host.
- Gatekeeping hosts: Attach your meme to a gatekeeping host. Malcolm Gladwell, though he does not use the language of memetics, argues that there are three types of gatekeepers to tipping points (a type of successful meme) (Gladwell, 2002). *Connectors* (hosts) are people who are good at networking. Connectors know the right sociotype, or group of people, in which the meme would be most effective. *Mavens* (hosts) have deep base knowledge and are respected by the public. Mavens may be scientists or news media celebrities. *Salesmen* (hosts) may be internal company salespeople or employee brand champions who are curators of the hook and the bait (Vallaster & de Chernatorny, 2006).
- Celebrity hosts: Connecting the meme to a celebrity host increases the probability that a meme will be retransmitted (Pringle, 2004). "Astroturfing" the meme may be one strategy that is particularly helpful in leveraging the power of the celebrity host. Here, the marketer pays celebrity hosts to twitter brand-based memes. Kim Kardashian, Soulja Boy, and Stephen Colbert are all celebrities with million plus Twitter followers who have made sponsored Twitters (Gunders & Brown, 2010).
- Mutation and Retro memes: Encourage the mutation of the original meme. This is a potentially dangerous strategy for advertisers as it risks losing control of the original meme as happened to the McDonald's Hash-tag campaign. However, incorporating mutations of the original meme may be a way to encourage meme reproduction and extend the life of the advertising campaign. The Old Spice campaign for which viewers created their own spinoff Mustaffa viral videos is an example of a successful mutation. Retro memes are a type of strategy whereby the memetic engineer transcribes a new meme on to an existing meme in an attempt to appropriate some of the properties of the latter. Examples of retro memes in advertising can be found in food marketing whereby a brand will transcribe a meme "light" on to a product, such as olive oil, to appropriate the light = low fat meme, versus the (truer) meme light = light color. Retro memes may also be part of a visual strategy to appropriate the visual meme for a valued trademark with its likeness.

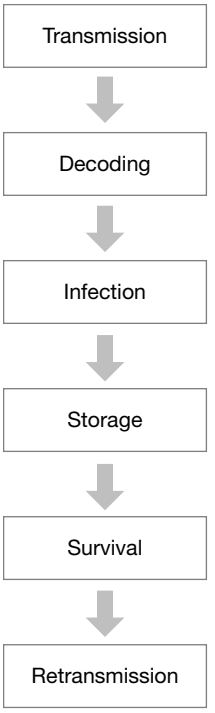

Figure 18.1 Advertising lifecycle of a meme (Adapted from Bjarneskans)

Conclusions and future research

While the Blackmore/Dawkins approach has largely kept true to the original conception of memetics, there is some reason to explore whether this model is best suited for advancing memetics theory in general and more specifically, its application in advertising. One of the strengths of the Blackmore/Dawkins approach is that there is a relatively clear mapping of the theory and its borders. For Blackmore, not every idea is a meme – only those ideas that can be passed on by imitation. Therein also lays one of the fundamental weaknesses of the model, especially from an advertising perspective. Limiting memetics to the study of imitation runs the risk of limiting the scope of memetics too drastically, too soon (Hull, 2000). Blackmore's model of meme replication leaves little room in which symbolic structure is decoded before it is retransmitted. Moreover, symbolic decoding has been a very useful tool in understanding how audiences respond to ideas (Williamson, 1978). Blackmore's approach to memetics has much in common with behaviorists' approaches to consumer behavior, in that both assume a "black box" model of the brain, with inputs and outputs, but with little attention to processing. It is difficult to see how memetics can be a truly progressive paradigm in advertising unless it can incorporate a psychological theory on to which considerations of cultural transmission can be made (Plotkin, 2000).

Perhaps it is asking too much of memetics at this stage of development to meet the stringent criteria of Plotkin (2000); he calls for laying out mechanisms with specific psychological functions sited within a particular anatomical structure. However, if one allows for the existence of different kinds of memes based on different mechanisms – as illustrated in the advertising lifecycle model of memetics above – of which imitation is just one, then different meme systems can be characterized by differing levels of copying fidelity, longevity, and fecundity. This expanded model would be more consistent with the complexity of the role of advertising in

culture. In sum, a single model of memetics, based on a single mechanism – imitation – will not be sufficiently complex to account for advertising and cultural complexity.

Even among supporters of memetics, there are concerns regarding the lack of empirical studies in what might be called applied memetics. The advertising lifecycle model of memes is an initial attempt to develop a propositional network of potentially testable aspects of memetics. The field must establish at least some evidence of correlational relationships that derive from memetics theory and apply them to meaningful dependent variables. Such correlational evidence will be necessary to develop before causal links and process issues are examined in future research.

New theoretical models of memetics should be explored for further inspiration in advertising application. Richard Brody's influential book, *Virus of the Mind,* with its focus on the role of memes and primordial human drives of fear, food, and sex would seem to offer up many testable propositions for advertising research (Brodie, 1996). Similarly, Aaron Lynch's provocative book *Thought Contagion*, which lays out seven modes of memetic transmission, may inspire empirical research to test these proposed processes (Lynch, 1998). One of the challenges with Lynch's work, as with memetics theory in general, is the lack of conceptual clarity in the definition of its most fundamental unit, the meme. Perhaps the best prospects for theoretical frameworks for memetics and advertising will be found in the emerging field of sociobiology. One of the attractive features of the sociobiology approach is that, like Blackmore's model, it is a coevolution theory, including genes and culture. Unlike Blackmore's approach, it distances itself from charges of biological determinism by focusing on developing a theory that sees culture itself as a system of inheritance (Richardson & Boyd, 2005). As such, the sociobiology approach to cultural transmission is less likely to fall victim to the continuing warfare between behaviorists and cognitive approaches to science.

Further reading

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Mesoudi, A., 2011. *Cultural Evolution: How Darwinian Theory Can Explain Human Culture and Synthesize the Social Sciences*. Chicago: University of Chicago Press. (State of the art review of the status of cultural evolution with applications to experimental economics, fashions and fads, herd behavior in financial markets and public policy.)

Whyte, J., 2004. *Crimes Against Logic: Exposing the Bogus Arguments of Politicians, Priests, Journalists, and Other Serial Offenders*. New York: McGraw-Hill. (Although not specifically dealing with memetics this book by the British philosopher debunks many of the more virulent memes of popular discourse in media, politics and advertising.)

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19

Confirmatory Tetrad Analysis as a tool to decide between the formative/reflective nature of constructs in marketing and management research

Joaquín Aldás-Manzano

Abstract

Although the consequences of incorrectly modelling formative latent variables as reflective constructs are serious, many researchers are still unaware of or reluctant to incorporate formative measurement in their models. The main reason may relate to the absence of a clear statistical rule to decide on the best causal relation between a latent variable and its indicators, as conceptual criteria can be ambiguous. This chapter follows the proposal of Bollen and Ting (2000) of using CTA as a statistical tool to unambiguously decide on the best configuration for latent variables. After presenting the CTA fundamentals, several empirical study cases are used to illustrate step-by-step its applicability in the marketing and management research field.

Key words

Confirmatory Tetrad Analysis, CTA, formative constructs, Structural Equation Modelling.

1. Introduction

Bollen (1989, p. 65) seminally stated, "Most researchers in the social sciences assume that indicators are effect indicators. Cause indicators are neglected despite their appropriateness in many instances." A few years later, Diamantopoulos and Winklhofer (2001) pointed out that was exactly the case in the marketing research field, and Jarvis, MacKenzie and Podsakoff (2003) proved that 28% of the latent constructs with multiple indicators published in the top marketing journals were incorrectly specified as reflective when they should have been formative.

The consequences of latent variables misspecification are serious. As MacKenzie, Podsakoff and Jarvis (2005, p. 728) indicate after Monte Carlo simulation testing, misspecification can

inflate unstandardized structural parameter estimates by as much as 400% or deflate them by as much as 80% and lead to either Type I or Type II errors of inference, depending on whether the endogenous or the exogenous construct is misspecified. Moreover, the simulation results suggest that there is a substantial probability that measurement model misspecification will not be detected with many of the most commonly used goodness-of-fit indices.

With such serious consequences, the question that arises is why the use of formative indicators for construct measurement in empirical research is still scarce. Diamantopoulos, Riefler and Roth (2008) assume that there are two main reasons that explain this situation: (a) many researchers are still unaware of the potential appropriateness of formative indicators for operationalizing particular constructs, and (b) researchers are often uncertain how to incorporate formative constructs into structural equation models as there are a number of controversial and not fully resolved issues concerning the conceptualization, estimation and validation of formative measures.

One of these not-fully-resolved issues is the absence of a clear statistical decision rule to decide on the best causal configuration between a latent variable and its indicators. At this moment most of the rules provided are mainly conceptual, e.g. there are no reasons to expect indicators to be correlated, dropping an indicator alters the meaning of the construct, measurement error is taken into account at the construct level (Jarvis, MacKenzie and Podsakoff, 2003). But as Bollen and Ting (2000) point out, the results of applying these criteria can be ambiguous with no clear resolution and do not provide an empirical means to check the specification.

In SEM when a researcher wants to compare two models, they can be estimated and compared on a basis of the difference between their associated chi-square statistic. However, estimating two models, one with formative indicators and another with reflective ones does not solve the problem as both models are not nested, that is, the parameters of one model are not s subset of the parameters in another model. Even more, estimating a SEM model with a formative construct is not always possible as it is often an underidentified model and therefore cannot be estimated.

Bollen and Ting (2000) propose using CTA as an empirical test of whether causal (formative) or effect (reflective) indicators specification is appropriate. However, as Bollen, Lennox and Dahly (2009) indicated recently, this method is still largely overlooked and they provide one reason for this: the relatively few published examples of its use. Accordingly, the main objective of this chapter is providing a basic step-by-step guide of how to use CTA to deal with the formative-reflective issue.

To accomplish this objective, the chapter is structured as follows. First, an intuitive introduction to the rationale of CTA will be provided. Second, the main steps in applying CTA will be detailed, that is how to identify vanishing tetrads and how to eliminate redundant vanishing tetrads. Third, the test statistic for vanishing tetrads will be presented and fourth, the issue of nested models, as a key step in the formative-reflective decision, will be addressed. Although the chapter will illustrate each step with applied examples, it will finish with three specific applications of CTA to decide between the formative or reflective nature of different constructs. During all this process, the two available SAS macros programmed to perform CTA will be used (Ting, 1995; Hipp, Bauer and Bollen, 2005) as well as different SEM programmes (Mplus, EQS) in order to make the chapter accessible to a wide number of researchers independently of their software preferences.

2. The rationale of confirmatory tetrad analysis

The logic underpinning CTA is quite straightforward. In the same way that each theoretical SEM model implies a covariance matrix, it also implies a set of tetrads that should disappear (vanish) and others that should not if the model is true. If we are able to establish whether or not those tetrads really vanish in our sample data, we will have a measure of the plausibility of our theoretical model.

Let us illustrate the rationale with a simple example following Bollen and Ting (1993). Figure 19.1 shows two alternative models that can be compatible with a set of four indicators $x_1 \ldots x_4$. A tetrad refers to the difference between the product of a pair of covariances and the product of another pair among four random variables. Following the notation of Kelley (1928) the population tetrad τ_{ghij} can be written as:

$$\tau_{ghij} = \sigma_{gh}\sigma_{ij} - \sigma_{gi}\sigma_{hj}$$

where σ_{ij} is the population covariance between the observed variables *i* and *j*.

As the number of tetrads depends on the number of indicators, both models in Figure 19.1 generate the same three tetrads:

$$\begin{aligned}\tau_{1234} &= \sigma_{12}\sigma_{34} - \sigma_{13}\sigma_{24}\\ \tau_{1432} &= \sigma_{13}\sigma_{42} - \sigma_{14}\sigma_{23}\\ \tau_{1423} &= \sigma_{14}\sigma_{23} - \sigma_{12}\sigma_{34}\end{aligned} \qquad (19.1)$$

The question now is, do the structure of models A and B in Figure 19.1 impose the same tetrads to be 0 (that is, to vanish) or should the different structures of both models provoke different tetrads in expression (19.1) to be null?

One indicator x_i is related to its latent variable $\xi_1$as follows:

$$x_i = \lambda_{i1}\xi_1 + \delta_i$$

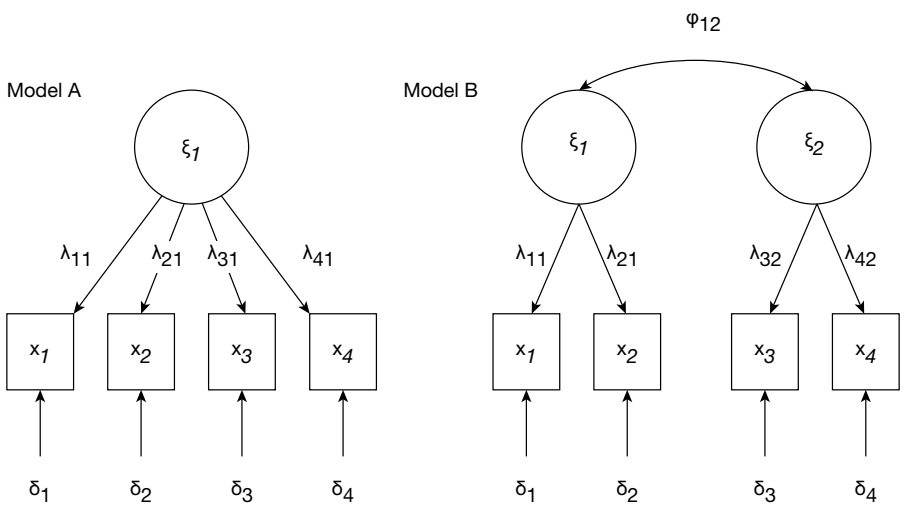

Figure 19.1 Alternative factor models

where δ_i is the random measurement error and λ_{i1} the factorial loading. For two indicators loading on the same factor (like x_1 and x_3 in model A of Figure 19.1), the population covariance between them can be written as follows:

$$\sigma_{ij} = \lambda_{i1}\lambda_{j1}\varphi_1$$

where φ_1 is the variance of the factor. However, if the indicators load on different factors (like x_1 and x_3 in model B of Figure 19.1), the population covariance adopts the form:

$$\sigma_{ij} = \lambda_{i1}\lambda_{j2}\varphi_{12}$$

being φ_{12} the covariance between the two factors. Taking this into account, for model A in Figure 19.1, all the tetrads of expression (19.1) should vanish. As a matter of example, for tetrad τ_{1234} (the same can be derived for the rest of the tetrads):

$$\begin{aligned}\tau_{1234} &= \sigma_{12}\sigma_{34} - \sigma_{13}\sigma_{24} = \\ &= (\lambda_{11}\lambda_{21}\varphi_1)(\lambda_{31}\lambda_{41}\varphi_1) - (\lambda_{11}\lambda_{31}\varphi_1)(\lambda_{21}\lambda_{41}\varphi_1) \\ &= \lambda_{11}\lambda_{21}\lambda_{31}\lambda_{41}\varphi_1^2 - \lambda_{11}\lambda_{21}\lambda_{31}\lambda_{41}\varphi_1^2 = 0\end{aligned}$$

So model A structure causes all the tetrads to vanish, but what happens with model B? Deriving the expression for tetrad τ_{1234} we get:

$$\begin{aligned}\tau_{1234} &= \sigma_{12}\sigma_{34} - \sigma_{13}\sigma_{24} = \\ &= (\lambda_{11}\lambda_{21}\varphi_1)(\lambda_{32}\lambda_{42}\varphi_2) - (\lambda_{11}\lambda_{32}\varphi_{12})(\lambda_{21}\lambda_{42}\varphi_{12}) \\ &= \lambda_{11}\lambda_{21}\lambda_{32}\lambda_{42}\varphi_1\varphi_2 - \lambda_{11}\lambda_{21}\lambda_{32}\lambda_{42}\varphi_{12}^2 \neq 0\end{aligned}$$

So in model B τ_{1234} is not going to be a vanishing tetrad, while the other two τ_{1342} and τ_{1423} will be. We leave the proof of the latter tetrad to the reader, but for the former:

$$\begin{aligned}\tau_{1342} &= \sigma_{13}\sigma_{42} - \sigma_{14}\sigma_{23} = \\ &= (\lambda_{11}\lambda_{32}\varphi_{12})(\lambda_{42}\lambda_{21}\varphi_{12}) - (\lambda_{11}\lambda_{42}\varphi_{12})(\lambda_{21}\lambda_{32}\varphi_{12}) \\ &= \lambda_{11}\lambda_{21}\lambda_{32}\lambda_{42}\varphi_{12}^2 - \lambda_{11}\lambda_{21}\lambda_{32}\lambda_{42}\varphi_{12}^2 = 0\end{aligned}$$

So the conclusion is that different model structures have different vanishing tetrads. Accordingly, if we want to test which of the two factorial models in Figure 19.1 are more plausible given our sample data, we will just need to develop a statistic that tests the null hypothesis that all the population tetrads that should theoretically vanish really do in our sample, that is, that the τ_{ghij} sample counterparts of the population vanishing τ_{ghij} are statistically different from zero. If the null hypothesis cannot be rejected for one of the models, it would provide us with evidence of a more reasonable factorial structure of that model according to our data.

Of course it may happen that both models are plausible according the CTA test. As will be shown later in this chapter, testing of nested models will be possible,[1] but first we will have to present the statistic in order to evaluate its distributional properties and derive a strategy to compare those nested models.

3. Identification of vanishing tetrads

From the above presentation of the rationale of CTA, it becomes evident that the key task to apply CTA is identifying which tetrads should vanish according the structure of the model we are testing.

In their seminal paper, Bollen and Ting (1993) proposed three approaches to do this, two theoretical ones and one empirical. The first one was to derive the vanishing tetrads by covariance algebra, as we have done in the previous section. However, it is evident that when the number of indicators increases, this derivation can be really cumbersome. The second alternative, called factor analytic rule, applies only to factor analysis models where each indicator is influenced only by one latent variable, being thus inapplicable to general SEM models. The third alternative is the empirical method that is easily applicable to any kind of model and that will be presented in this section.

Let us consider the model depicted in Figure 19.2. It illustrates the well-known influence that the perceived usefulness of a technology exerts on its adoption according Technology Acceptance Models (Davis et al., 1989). Indicators used in this example are those proposed by Gefen and Straub (2005).

The steps implied in the empirical approach to determine the vanishing tetrads are the following (Bollen and Ting, 1993):

- Generate a covariance matrix that perfectly fits the proposed model. The easiest way of doing this is just estimating the model via conventional SEM programs like EQS (Bentler, 1995) or Mplus (Muthen and Muthen, 2009). The SEM model estimation will calculate the parameters of the model that minimize the differences between the covariance matrix those parameters imply and the sample covariance matrix. We do not mind whether or not that reproduced covariance matrix fits the sample matrix, we have just got a matrix that perfectly fits the theoretical model independently of the degree of fit with the sample one.
- Using Ting (1995) SAS macro,[2] we will calculate all the tetrads implied by the model (vanishing tetrads or not). As the matrix used is the one implied by the model and perfectly consistent with it, those that theoretically should be zero, empirically will be within rounding error of zero. Those tetrads within rounding of zero will be taken as the model implied vanishing tetrads.

Step 1. Obtaining the reproduced covariance matrix

In this example, the model in Figure 19.2 was estimated using EQS 6.1 through the syntax showed in Table 19.1. The output in Table 19.2 shows the sample covariance matrix (not needed in this step) and the reproduced covariance matrix that will be used.

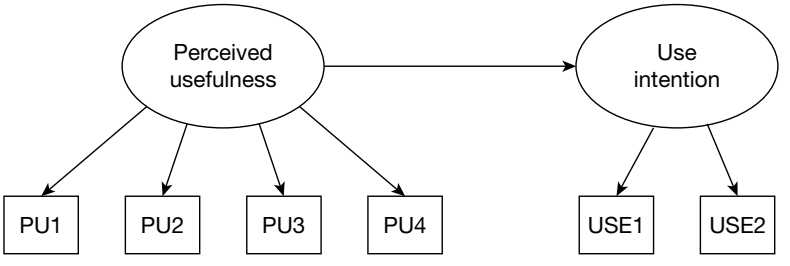

Figure 19.2 A simple TAM model

Table 19.1 EQS syntax to estimate proposed model

```
/TITLE
Step 1. Obtaining the reproduced covariance matrix.

/SPECIFICATIONS
DATA='Z:\CTA_GLASGOW\CAP_MOD1\datos\datos.ESS';
VARIABLES=6; CASES=100; METHOD=ML; ANALYSIS=COVARIANCE; MATRIX=RAW;
/LABELS
V1=PU1; V2=PU2; V3=PU3; V4=PU4; V5=USE1; V6=USE2;

/EQUATIONS
V1 =   F1 + E1;   !Perceived usefullness
V2 =   *F1 + E2;
V3 =   *F1 + E3;
V4 =   *F1 + E4;

V5 =   F2 + E5;   !Intention to buy
V6 =   *F2 + E6;

F2=*F1+D2;        !Structural equation

/VARIANCES
 F1 = *; E1 TO E6=*; D2=*;

/PRINT
LI=132; COVARIANCE=YES; !To print reproduced matrix, not a default

/END
```

Table 19.2 Sample and reproduced covariance matrix

COVARIANCE MATRIX TO BE ANALYZED: 6 VARIABLES (SELECTED FROM 6 VARIABLES)
BASED ON 100 CASES.

		PU1 V1	PU2 V2	PU3 V3	PU4 V4	USE1 V5	USE2 V6
PU1	V1	1.751					
PU2	V2	0.932	1.421				
PU3	V3	1.036	0.834	1.579			
PU4	V4	0.883	0.817	1.047	1.513		
USE1	V5	0.638	0.392	0.819	0.773	3.152	
USE2	V6	0.718	0.277	0.732	0.827	1.890	2.818

MODEL COVARIANCE MATRIX FOR MEASURED AND LATENT VARIABLES

		PU1 V1	PU2 V2	PU3 V3	PU4 V4	USE1 V5	USE2 V6
PU1	V1	1.751					
PU2	V2	0.810	1.421				
PU3	V3	1.036	0.870	1.579			
PU4	V4	0.959	0.805	1.030	1.513		
USE1	V5	0.699	0.587	0.751	0.694	3.152	
USE2	V6	0.678	0.569	0.728	0.674	1.890	2.818

Step 2. Calculate all tetrads

Ting (1995) SAS macro options[3] are described in detail in the referenced paper. The only option needing comment in this step is the EXEC = PARTIAL option that specifies the mode of execution. The PARTIAL modificator requests the program to compile a list of all tetrads with their associated IDs and *t* values. We need this list to determine which tetrads should be empirically considered vanishing tetrads. Table 19.3 illustrates the SAS syntax to execute the macro.

As the reproduced matrix has been used, the tetrads that should vanish will be with rounding errors of zero. Table 19.4 shows the list of all the 45 tetrads implied by the model.

Step 3. Identify model implied vanishing tetrads

Table 19.4 makes evident that only 12 of the list of tetrads are not vanishing tetrads (bolded font added by authors). It can be appreciated that the values of the residuals associated to vanishing tetrads are very near zero value. An additional check as Ting (1995) indicates, is the *t* value, which is the significant test for each tetrad. The null hypothesis would be that the tetrad is not a vanishing tetrad, a *t* value lower than the conventional level, say 1.96 ($p < .05$) would not allow us to reject this statement and the tetrad would be a vanishing one. As the following steps will make evident, it is very important to retain the vanishing tetrad in in the first column of Table 19.4. In this example, the vanishing tetrads are numbers: 1 to 15, 18 to 24, 27, 30 to 36, 39, 42 and 45.

4. Redundant vanishing tetrads

Once the vanishing tetrads implied by the model are identified, we are able to present the test statistic, but an additional problem arises: the question of redundant vanishing tetrads. If we go back to model A in Figure 19.1, we identified three vanishing tetrads:

$$\tau_{1234} = \sigma_{12}\sigma_{34} - \sigma_{13}\sigma_{24} = 0 \qquad (A)$$
$$\tau_{1432} = \sigma_{13}\sigma_{42} - \sigma_{14}\sigma_{23} = 0 \qquad (B)$$
$$\tau_{1423} = \sigma_{14}\sigma_{23} - \sigma_{12}\sigma_{34} = 0 \qquad (C)$$

Simple algebraic operations show that B can be directly by adding tetrads A and C:

$$\tau_{1234} + \tau_{1423} = \cancel{\sigma_{12}\sigma_{34}} - \sigma_{13}\sigma_{24} + \sigma_{14}\sigma_{23} - \cancel{\sigma_{12}\sigma_{34}} =$$
$$= -\sigma_{13}\sigma_{42} + \sigma_{14}\sigma_{23} = \tau_{1342}$$

Table 19.3 Ting (1995) SAS macro to determine the vanishing tetrads

```
%include 'c:\CTA-SAS2.mac';
%cta(CMATRIX =
1.751
0.810 1.421
1.036 0.870 1.579
0.959 0.805 1.030 1.513
0.699 0.587 0.751 0.694 3.152
0.678 0.569 0.728 0.674 1.890 2.818,
N = 100, VARS = X1 X2 X3 X4 X5 X6, EXEC = PARTIAL);
RUN;
```

Table 19.4 Vanishing tetrads identified

Confirmatory Tetrad Analysis
List of Tetrads

id	tetrad	residual	tvalue
1	t(1,2,3,4)	0.00032	0.00264
2	t(1,2,4,3)	-0.00003	-0.00025
3	t(1,3,4,2)	-0.00035	-0.00303
4	t(1,2,3,5)	0.00018	0.00097
5	t(1,2,5,3)	0.00018	0.00106
6	t(1,3,5,2)	0.00000	0.00001
7	t(1,2,3,6)	0.00020	0.00113
8	t(1,2,6,3)	-0.00018	-0.00112
9	t(1,3,6,2)	-0.00038	-0.00200
10	t(1,2,4,5)	-0.00079	-0.00443
11	t(1,2,5,4)	-0.00056	-0.00332
12	t(1,4,5,2)	0.00024	0.00127
13	t(1,2,4,6)	0.00027	0.00159
14	t(1,2,6,4)	0.00015	0.00095
15	t(1,4,6,2)	-0.00012	-0.00067
16	**t(1,2,5,6)**	**1.13317**	**3.03253**
17	**t(1,2,6,5)**	**1.13291**	**3.03035**
18	t(1,5,6,2)	-0.00026	-0.00220
19	t(1,3,4,5)	-0.00123	-0.00690
20	t(1,3,5,4)	-0.00099	-0.00487
21	t(1,4,5,3)	0.00024	0.00124
22	t(1,3,4,6)	0.00011	0.00067
23	t(1,3,6,4)	-0.00008	-0.00040
24	t(1,4,6,3)	-0.00019	-0.00103
25	**t(1,3,5,6)**	**1.44917**	**3.37060**
26	**t(1,3,6,5)**	**1.44886**	**3.37275**
27	t(1,5,6,3)	-0.00031	-0.00257
28	**t(1,4,5,6)**	**1.34138**	**3.27465**
29	**t(1,4,6,5)**	**1.34198**	**3.27769**
30	t(1,5,6,4)	0.00059	0.00505
31	t(2,3,4,5)	-0.00078	-0.00509
32	t(2,3,5,4)	-0.00083	-0.00446
33	t(2,4,5,3)	-0.00005	-0.00031
34	t(2,3,4,6)	0.00034	0.00236
35	t(2,3,6,4)	0.00031	0.00177
36	t(2,4,6,3)	-0.00003	-0.00018
37	**t(2,3,5,6)**	**1.21696**	**3.25087**
38	**t(2,3,6,5)**	**1.21698**	**3.25522**
39	t(2,5,6,3)	0.00002	0.00015
40	**t(2,4,5,6)**	**1.12581**	**3.15025**
41	**t(2,4,6,5)**	**1.12656**	**3.15550**
42	t(2,5,6,4)	0.00075	0.00697
43	**t(3,4,5,6)**	**1.44053**	**3.48139**
44	**t(3,4,6,5)**	**1.44147**	**3.48224**
45	t(3,5,6,4)	0.00094	0.00881

As will become evident when we present the test statistic, the existence of vanishing tetrads that are linear dependent on others can cause the covariance matrix of the tetrads to be singular and its inverse not to exist. That forces us to identify the redundant tetrads and perform the test only with the non-redundant ones. Bollen and Ting (1993) developed a procedure to deal with this problem. These authors demonstrated that whenever the same pair of covariances appears in two vanishing tetrads, a redundant vanishing tetrad is implied. We have already illustrated this fact in the previous derivation. As the pair of covariances σ_{12} and σ_{34} appears in the vanishing tetrads A and C, there is a redundant vanishing tetrad (B) implied. Fortunately this procedure is implemented in Ting (1995) and Hipp, Bauer and Bollen (2005) macros and is automatically developed.

Table 19.5 illustrates the step of identifying non-redundant vanishing tetrads using Ting (1995) macro to our TAM model. As we showed in the previous section, a list of 33 tetrads had been identified as theoretically vanishing ones when the macro was applied to the reproduced covariance matrix. Now is the moment to apply the macro to the real data, that is to the sample matrix.

It must be noticed that now, the sample matrix obtained in the SEM estimation of the model (Table 19.2) is present in the syntax; the KEEPT modificator indicates to the macro which are the theoretical vanishing tetrads, as obtained in the previous step, and EXEC = FULL requests a complete execution of the CTA-SAS macro, as PARTIAL in the previous step requested the program to compile a list of all the tetrads to identify the vanishing ones.

As indicated, the macro automatically applies Bollen and Ting (1993) procedure to identify and ignore redundant vanishing tetrads. Accordingly, the test will be finally performed only on the 8 vanishing tetrads identified as non-redundant (Table 19.6).

One point should be taken into consideration here. When we illustrated the redundant vanishing tetrad problem, we demonstrated that tetrad B was linearly dependent on tetrad A and C and thus, we deleted tetrad B. But it is evident that we could have deleted tetrad A or C and kept B. That means that depending on the order of redundancy elimination, we could have different sets of independent vanishing tetrads. To avoid this fact affecting the results of the test, Bollen and Ting (1993) recommend replicating the test with a different set of non-redundant vanishing tetrads. Hipp, Bauer and Bollen (2005) macro assess the sensitivity of the test results to the particular test selected by allowing randomized selection of multiple sets of non-redundant vanishing tetrads. Illustration of this will be provided in ulterior CTA applications in the final section of this chapter.

Table 19.5 CTA macro applied to the sample matrix

```
%include 'c:\CTA-SAS2.mac';
%cta(CMATRIX=
1.751
0.932      1.421
1.036      0.834      1.579
0.883      0.817      1.047      1.513
0.638      0.392      0.819      0.773      3.152
0.718      0.277      0.732      0.827      1.890      2.818,
keept=
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 18 19 20 21 22 23 24 27 30 31 32 33 34 35 36 39 42 45,
N=100, VARS=X1 X2 X3 X4 X5 X6, EXEC=FULL, AC=NORMAL);
RUN;
```

Table 19.6 Non-redundant vanishing tetrads

```
Confirmatory Tetrad Analysis
 List of Nonredundant Tetrads

 id      tetrad      residual

  1    t(1,2,3,4)     0.12939
  2    t(1,2,4,3)     0.23938
  4    t(1,2,3,5)     0.35720
  6    t(1,3,5,2)    -0.12598
  7    t(1,2,3,6)     0.39525
 10    t(1,2,4,5)     0.37430
 14    t(1,2,6,4)     0.18416
 18    t(1,5,6,2)    -0.10473
```

5. Test statistic for vanishing tetrads[4]

Once we have identified a set of independent (non-redundant) vanishing tetrads, we must test whether they are simultaneously equal to zero, which would indicate that the factorial structure that has been proposed looks feasible according to the sample data. Bollen (1990) derived a *T* statistic for this question.

The steps we have given up to here have identified a set of non-redundant population tetrads that should vanish. However, their sample counterparts, τ_{ghij} typically have nonzero values due to sampling errors. The null hypothesis of H_0: $\tau = 0$ should be tested against H_a: $\tau \neq 0$ being the τ population vector of vanishing tetrads.

As indicated, Bollen (1990) derived a test statistic, *T*, which tests the abovementioned null hypothesis:

$$T = N\mathbf{t}'\Sigma_{tt}^{-1}\mathbf{t}$$

where *N* is the sample size, t is a vector of the independent sample tetrad differences and $\boldsymbol{\Sigma}_{tt}^{-1}\mathbf{t}$ is the inverse of the covariance matrix of the limiting distribution of t as *N* goes to infinity. The *T* statistic asymptotically approximates a chi-square distribution with degrees of freedom equal to the number of vanishing tetrads in the test. A non-significant result suggests that the observed tetrad differences are not significantly different from zero, indicating that the data are consistent with the vanishing tetrads implied by the hypothesized model.

The covariance matrix $\boldsymbol{\Sigma}_{tt}$ can be obtained by the following steps. First, a vector of tetrad equations, τ, which includes all non-redundant vanishing tetrads. The elements of τ take the form $\boldsymbol{\sigma}_{gh}\boldsymbol{\sigma}_{ij} - \boldsymbol{\sigma}_{gi}\boldsymbol{\sigma}_{hj}$. Second, a vector of non-redundant covariances σ that appear in τ is built. Third, we construct a covariance matrix $\boldsymbol{\Sigma}_{ss}$ of the limiting distribution of the sample covariances corresponding to the elements in σ. The elements in $\boldsymbol{\Sigma}_{ss}$ are given by:

$$[\Sigma_{ss}]_{ef,gh} = \sigma_{efgh} - \sigma_{ef}\,\sigma_{gh}$$

where $\boldsymbol{\sigma}_{efgh}$ is the fourth-order moment for the *e*, *f*, *g* and *h* variables. Its sample estimator is:

$$S_{efgh} = (1/\mathrm{N})[\Sigma(X_e - \bar{X}_e)(X_f - \bar{X}_f)(X_g - \bar{X}_g)(X_h - \bar{X}_h)]$$

If the observed variables are multinormally distributed, the elements in $\boldsymbol{\Sigma}_{ss}$ simplify to:

$$[\Sigma_{ss}]_{ef,gh} = \sigma_{ef}\,\sigma_{gh} - \sigma_{eg}\,\sigma_{fh}$$

Finally the covariance matrix $\boldsymbol{\Sigma}_{tt}$ is estimated by:

$$\Sigma_{tt} = (\partial\tau/\partial\sigma)'\,\Sigma_{ss}\,(\partial\tau/\partial\sigma)$$

Turning back to our example, the syntax in Table 19.5 directly calculates the T statistic and its associated significance (as the EXEC = FULL modificator is present). Table 19.7 shows the results obtained.

Attending to Table 19.7 the CTA test statistic is $T = 8.85$ with 8 *df* corresponding to the 8 non-redundant vanishing tetrads ($p = 0.35$). This non-significant result suggests that the observed tetrad differences are not significantly different from zero, indicating that the data are consistent with the vanishing tetrads implied by the hypothesized model.

It is not rare to deal with non-metric variables in research in marketing and management. The T statistic derived above, however, assumes multivariate normality which is, obviously, a too restrictive assumption when our model has non-metric indicators. Accordingly, Hipp and Bollen (2003) derived a version of the T statistic for the case in which the indicators are not metric variables that will be described now.

This modification assumes that a vector of continuous indicators x* underlies the vector of observed categorical variables x. The covariance matrix of the x* variables can be estimated using the appropriate correlation according to the measurement nature of each pair of variables: *tetrachoric* correlation when the corresponding pair of x variables are dichotomous, *polychoric* correlation if both variables are ordinal and *polyserial* correlation when one variable is metric and the other is ordinal or dichotomous. Researchers usually refer to this matrix as "polychoric" correlation (covariance) matrix independently of the correlations it has got inside. We will refer to this matrix as $\boldsymbol{\Sigma}_{x^*x^*}$.

Although there are different ways to calculate the polychoric correlation matrix, the most common one is that implemented in most of SEM software: estimation of the thresholds for each variable from univariate marginals and estimation of polychoric correlation conditional on

Table 19.7 Test statistic for vanishing tetrads

```
            Confirmatory Tetrad Analysis
                    Test Results

               Matrix Used for the Test

                              S

 1.751     0.932     1.036     0.883     0.638     0.718
 0.932     1.421     0.834     0.817     0.392     0.277
 1.036     0.834     1.579     1.047     0.819     0.732
 0.883     0.817     1.047     1.513     0.773     0.827
 0.638     0.392     0.819     0.773     3.152      1.89
 0.718     0.277     0.732     0.827      1.89     2.818

                   CHI       DF      PROB

                  8.85        8    0.3548
```

these thresholds. But if we go back to the expression of the T statistic for continuous variables, we will realize that it is not the covariance matrix it has got inside but $\boldsymbol{\Sigma}_{tt}$, that is the covariance matrix of the limiting distribution of t as N goes to infinity, which expression is:

$$\Sigma_{tt} = (\partial\tau/\partial\sigma)' \, \Sigma_{ss} (\partial\tau/\partial\sigma)$$

The question is how to get the equivalent to $\boldsymbol{\Sigma}_{ss}$ when variables are not metric. The answer is by using the asymptotic covariance matrix of the polychoric correlations $\boldsymbol{\Sigma}_{pp}$ instead. This can easily be got using SEM software like PRELIS that uses the implementation of Jöreskog (1994) or Mplus which uses that by Muthen and Satorra (1995).

So the procedure is as follows: the sample estimate of the independent vanishing tetrads for the polychoric correlations is used to form t and $\boldsymbol{\Sigma}_{tt}$ is then obtained:

$$\Sigma_{tt} = (\partial\tau/\partial\sigma)' \, \Sigma_{pp} (\partial\tau/\partial\sigma)$$

and the new T statistic for non-metric variables adopts the usual form of:

$$T = N\mathbf{t}'\Sigma_{tt}^{-1}\mathbf{t}$$

where all the terms are known.

Let us illustrate the process for the same example depicted in Figure 19.2. As the indicators are measured Likert type scales, it makes sense as many researchers consider these scales as ordinal ones and not as interval ones, at least when the number of points is reduced (5 or 7 points) as is the case.

The first step is getting both the sample polychoric covariance S matrix and the asymptotic covariance matrix $\boldsymbol{\Sigma}_{pp}$. We will use Mplus 5 (Muthen and Muthen, 2009) to compute a saturated model using the WLS estimator as illustrated in Table 19.8. It must be noticed that both matrices are saved as a file with .pcm extension for the S matrix and with .acm for the $\boldsymbol{\Sigma}_{pp}$ matrix.

Remembering the process followed with continuous variables, we will need both the sample polychoric covariance matrix but also the polychoric matrix implied by the model we are testing, so we must estimate the model depicted in Figure 19.2 in order to get this matrix. Table 19.9 shows Mplus syntax and Table 19.10 the polychoric reproduced matrix as got in the ouput, because it cannot now be saved in a file.

We now have now all the information and we are in a position to apply CTA to evaluate whether the data are consistent with the vanishing tetrads implied by the model. The CTANEST1 macro presented in Hipp, Bauer and Bollen (2005) will be used.[5] This macro presents relevant improvements regarding the Ting (1995) one. The main one may be that it allows the researcher to assess the vanishing tetrads of the model when data come from dichotomous, ordinal or censored variables, but also automates the procedure of determining the vanishing tetrads implied by the model (which was done manually using the Ting (1995) macro) and pulls random draws of non-redundant vanishing tetrads to assess the sensitivity of the results.

Table 19.11 shows the SAS syntax to execute the Hipp, Bauer and Bollen (2005) macro. Few clarifications are needed, as the documentation of the macro is really detailed. However we will indicate that %ctafile is an additional macro provided by the authors to read the files with the sample polychoric and asymptotical covariance matrices we got in Table 19.8.

Table 19.8 Mplus syntax to extract polychoric and asymptotic covariance matrices

```
TITLE:      Getting polychoric and asymptotic covariance matrices.
DATA:
  FILE IS C:\datos.dat;
VARIABLE:
  MISSING ARE ALL .;
  NAMES ARE PU1 PU2 PU3 PU4 USE1 USE2;
  CATEGORICAL = PU1-USE2;
ANALYSIS:   ESTIMATOR=WLS;          !Congeneric (saturated) model
MODEL:      PU1 WITH PU2-USE2;
            PU2 WITH PU3-USE2;
            PU3 WITH PU4-USE2;
            PU4 WITH USE1-USE2;
            USE1 WITH USE2;

OUTPUT:     SAMPSTAT TECH3 MODINDICES (0) STANDARDIZED RESIDUAL;
SAVEDATA:   TECH3 IS Z:\ACM_MUESTRAL.ACM;  !Saves the ACM in a file
            SAMPLE IS Z:\MVC_MUESTRAL.PCM;  !Saves the PCM in a file
```

Table 19.9 Mplus syntax to get the reproduced polychoric matrix

```
TITLE:      Getting the reproduced polychoric matrix
DATA:
  FILE IS C:\datos.dat;
VARIABLE:
  MISSING ARE ALL .;
  NAMES ARE PU1 PU2 PU3 PU4 USE1 USE2;
  CATEGORICAL = PU1-USE2;
ANALYSIS:   ESTIMATOR=WLS;
MODEL:      F1 BY PU1 PU2 PU3 PU4;  !Model to be tested equations
            F2 BY USE1 USE2;
            F2 ON F1;

OUTPUT:     SAMPSTAT MODINDICES (0) STANDARDIZED RESIDUAL TECH3;
!Residual option prints the reproduced polychoric matrix in the output
```

Table 19.10 Reproduced polychoric matrix

Model Estimated Covariances/Correlations/Residual Correlations

	PU1	PU2	PU3	PU4	USE1
PU1					
PU2	0.613				
PU3	0.659	0.692			
PU4	0.645	0.677	0.728		
USE1	0.364	0.382	0.410	0.402	
USE2	0.319	0.335	0.360	0.352	0.686

%ctanest1 invokes the CTA macro. IMPMAT1B provides the model-implied covariance matrix we got with Table 19.9 syntax and that was shown in Table 19.10 (1's have been added to the diagonal), nesttest = 0 indicates we are not comparing two nested models, pchor = 1

indicates we are bringing in a polychoric correlation matrix as a file, mplus = 1 indicates the ACM matrix has been brought from Mplus, lowdiag = 1 stresses the fact that we are providing the model-implied covariance matrix as lower diagonal (the program will symmetrize it) and, finally reps = 10 represents the number of randomization replications requested for the program to be evaluate the sensitivity of the test to different sets of non-redundant vanishing tetrads.

The results summarized in Table 19.12 confirm the results we got previously when we considered the indicators as continuous variables and applied Ting (1995) macro.

It should be noticed that the selection of different sets of non-redundant vanishing tetrads does not affect the results of the estimation performed.

Table 19.11 Executing CTANEST1 macro

```
%include 'c:\ctafile.mac';
%ctafile(vars = 6, mplus = 1,pcm = 1,
       pcmfile = c:\mvc_muestral.pcm,
       acmfile = c:\acm_muestral.acm);
%include 'c:\ctanest1.mac';
%ctanest1(IMPMAT1B =
1.000
0.613  1.000
0.659  0.692  1.000
0.645  0.677  0.728  1.000
0.364  0.382  0.410  0.402  1.000
0.319  0.335  0.360  0.352  0.686  1.000,
N = 100, vars = 6, nesttest = 0, pchor = 1, lisrel = 0, mplus = 1,
lowdiag = 1, reps = 10);
run;
```

Table 19.12 Results of CTA analysis

```
        Tetrad Test for the Model

      Chi-Square        df   p-value

       1.2667632         4 0.8669889

                 results
replication        chi   df        p

   1             1.27     4        0.8670
   2             1.27     4        0.8670
   3             1.27     4        0.8670
   4             1.27     4        0.8670
   5             1.27     4        0.8670
   6             1.27     4        0.8670
   7             1.27     4        0.8670
   8             1.27     4        0.8670
   9             1.27     4        0.8670
  10             1.27     4        0.8670
```

6. Nested models

If we look again the situation that Figure 19.1 introduced, it is a common task in management and marketing research to have to decide which of two possible theoretical factorial structures better suits the real world represented by sample data.

This problem can be faced using CTA if the models are nested in terms of vanishing tetrads, that is the set of non-redundant vanishing tetrads of one model is a subset of the other model's ones. The question may arise if CTA is adding value to the classical SEM nested model strategy of comparing the χ^2 that are got through maximum likelihood estimation procedures and evaluating the significance of the difference. It will become evident when we present how CTA can be applied to deciding between the formative or reflective nature of a latent variable that models that are not nested according to the SEM approach, and though cannot be compared through the χ^2 test, are nested in terms of vanishing tetrads and can be compared using CTA. But let us first provide a simple example to illustrate the process of comparing nested models using CTA.

Figure 19.3 illustrates the classical example that is in the origin of exploratory factor analysis, that is, the Spearman (1904) work that hypothesized that students' performances in various courses are intercorrelated and their intercorrelations could be explained by their general intelligence level (model A) and an alternative model B that hypothesized that students' grades are a function of not one, but two different dimensions of intelligence, let us call them quantitative and verbal intelligence, that would be reflected in a differential performance on grades like Mathematics, Physics and Chemistry (quantitative) or English, History or French (verbal). Table 19.13 shows the sample covariance matrix. Data are taken from the Sharma (1996) presentation of exploratory factor analysis.

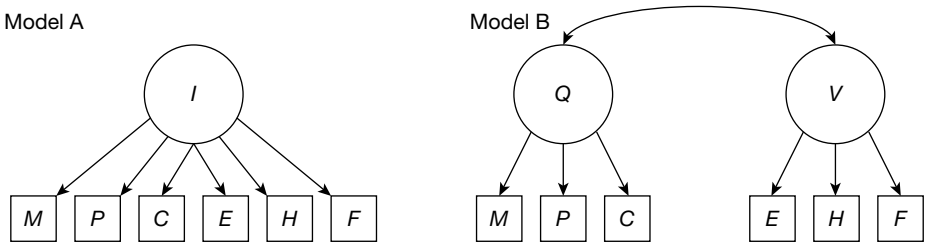

Figure 19.3 Alternative models to explain intelligence

Table 19.13 Sample covariance matrix

	M	*P*	*C*	*E*	*H*	*F*
M	4.000					
P	2.248	4000				
C	2.160	2040	4.000			
E	1.280	1520	1.440	4000		
H	1.136	1404	1.344	2.744	4.000	
F	1.480	1.720	1.620	2.920	2.940	4.000

n = 200

Both models can be compared if they are nested in terms of tetrad. As we demonstrated in section 2, model A is a single factor model and all the tetrads should vanish, while that is not true for model B. So model B has fewer vanishing tetrads than model A, model A being more restricted than model B.

The first step will be getting the implied covariance matrices of both models. As in previous sections, using SEM software is the easiest way of doing it. Table 19.14 shows EQS syntax to estimate models in Figure 19.3, and Table 19.15 the implied covariance matrices they generate.

Although the Hipp, Bauer and Bollen (2005) macro can perform the analysis automatically, we will perform a final manual analysis using the Ting (1995) macro to illustrate that both models are really nested in terms of vanishing tetrads. Accordingly with steps described in previous sections, vanishing tetrads have been empirically determined by applying Ting (1995) macro to the reproduced covariance matrix of both models (Table 19.16). Table 19.17 shows that, as expected, all the tetrads of model A are vanishing tetrads (1 to 45) and that vanishing tetrads of model B (1 to 9, 12, 15, 18, 21, 24, 27 to 30, 33, 36 and 39 to 45) are a subset of them, making sense to evaluate which structure fits better real data.

Once theoretical vanishing tetrads have been empirically identified, it must be tested whether that structure of vanishing tetrads is compatible in both models with empirical data or not (Table 19.18 for the syntax and Table 19.19 for the output).

The results show that the single factor model A does not look compatible with the sample covariance matrix, as the null hypothesis that the non-redundant tetrads that should vanish do, can be rejected ($\chi^2(9) = 27.84$, $p < .01$). On the contrary, model B which hypothesizes a two factor structure for intelligence looks plausible, as the null hypothesis that those non-redundant tetrads that should vanish effectively do, cannot be rejected ($\chi^2(8) = 4.25$, $p > .05$).

But both models could have not been able to reject the null hypothesis, which criterion should have been followed to name a preferable model. Attending Bollen and Ting (1993, p. 152) if "the difference in the test statistics for the two models is not significant, this lends support to the model that implies the most vanishing tetrads. If the test result is significant, we would prefer the model with the fewest vanishing tetrads." According to our data, the difference of the test statistics is significant[6] ($\Delta\chi^2(1) = 23.59$, $p < .01$) and the model with few vanishing tetrads is preferred, that is, model B, as expected.

7. CTA as a tool to decide on the formative/reflective nature of constructs

Bollen and Ting (2000) propose using CTA as an empirical test of whether causal (formative) or effect (reflective) indicators specification is appropriate. Although not frequently used, mainly because of the lack of published examples (Bollen, Lennox and Dahly, 2009) some attempts have been made in the last years and in different fields.

Bucic and Gudergan (2004) used CTA to decide if the construct "alliance learning" should be modelled as a formative construct. Venaik, Midgley and Devinney (2005) modelled as formative different environmental constructs in the international business and strategy field as a consequence of CTA tests. Perreira et al. (2005) chose a MIMIC configuration for the epidemiological studies depression scale (CES–D) according to CTA results, the same tool used by Glanville and Paxton (2007) to find that generalized trust was better explained by the formative social learning model. Cadieux, Roy and Desmarais (2006) used CTA to take a decision on the nature of constructs in their preliminary validation of a new occupational health and safety measure. Wilson, Callaghan and Stainforth (2007) used CTA to decide how the brand personality construct should be measured. The same approach has been followed by Klein and Rai (2009) regarding the strategic information flows, relationship-specific performance and

Table 19.14 EQS syntax to get implied covariance matrices

```
/TITLE
Model A
/SPECIFICATIONS
VARIABLES= 6; CASES= 200;
MATRIX=COV; ANALYZE=COV;METHOD=ML;

/MATRIX
4.000
2.248 4.000
2.160 2.040 4.000
1.280 1.520 1.440 4.000
1.136 1.404 1.344 2.744 4.000
1.480 1.720 1.620 2.920 2.940 4.000

/EQUATIONS
V1=*F1+E1;
V2=*F1+E2;
V3=*F1+E3;
V4=*F1+E4;
V5=*F1+E5;
V6=*F1+E6;


/VARIANCES
E1 TO E6=*; F1=1;

/COVARIANCES

/PRINT
FIT=ALL; COVARIANCE=YES; LI=132;

/END
```

```
/TITLE
Model B
/SPECIFICATIONS
VARIABLES= 6; CASES= 200;
MATRIX=COV; ANALYZE=COV;METHOD=ML;

/MATRIX
4.000
2.248 4.000
2.160 2.040 4.000
1.280 1.520 1.440 4.000
1.136 1.404 1.344 2.744 4.000
1.480 1.720 1.620 2.920 2.940 4.000

/EQUATIONS
V1=*F1+E1;
V2=*F1+E2;
V3=*F1+E3;
V4=*F2+E4;
V5=*F2+E5;
V6=*F2+E6;


/VARIANCES
E1 TO E6=*; F1=1; F2=1;

/COVARIANCES
F1,F2=*;
/PRINT
FIT=ALL; COVARIANCE=YES; LI=132;

/END
```

Table 19.15 Implied covariance matrices in models A and B

MODEL COVARIANCE MATRIX FOR MEASURED AND LATENT VARIABLES

	V1	V2	V3	V4	V5	V6
V1	4.000					
V2	0.927	4.000				
V3	0.884	1.005	4.000			
V4	1.475	1.678	1.600	4.000		
V5	1.462	1.663	1.586	2.646	4.000	
V6	1.601	1.821	1.737	2.898	2.872	4.000

MODEL COVARIANCE MATRIX FOR MEASURED AND LATENT VARIABLES

	V1	V2	V3	V4	V5	V6
V1	4.000					
V2	2.215	4.000				
V3	2.107	2.128	4.000			
V4	1.427	1.441	1.371	4.000		
V5	1.426	1.440	1.370	2.704	4.000	
V6	1.552	1.567	1.491	2.943	2.940	4.000

Table 19.16 Ting (1995) macro to empirically identify vanishing tetrads

```
/* Model A*/
%include 'c:\CTA-SAS2.mac';
%cta(CMATRIX=
4.000
0.927 4.000
0.884 1.005 4.000
1.475 1.678 1.600 4.000
1.462 1.663 1.586 2.646 4.000
1.601 1.821 1.737 2.898 2.872 4.000,

N=200, VARS=X1- X6, EXEC=PARTIAL);
RUN;
```

```
/* Model B*/
%include 'c: \CTA-SAS2.mac';
%cta(CMATRIX=
4.000
2.248 4.000
2.160 2.040 4.000
1.280 1.520 1.440 4.000
1.136 1.404 1.344 2.744 4.000
1.480 1.720 1.620 2.920 2.940 4.000,

N=200, VARS=X1-X6, EXEC=PARTIAL);
RUN;
```

Table 19.17 List of tetrads

Confirmatory Tetrad Analysis
List of Tetrads

id	tetrad	residual	tvalue
1	t(1,2,3,4)	-.000152	-.000282649
2	t(1,2,4,3)	0.000825	0.001629620
3	t(1,3,4,2)	0.000977	0.001878447
4	t(1,2,3,5)	0.000130	0.000243159
5	t(1,2,5,3)	0.000912	0.001810025
6	t(1,3,5,2)	0.000782	0.001511520
7	t(1,2,3,6)	0.000435	0.000765171
8	t(1,2,6,3)	0.001194	0.002251374
9	t(1,3,6,2)	0.000759	0.001388169
10	t(1,2,4,5)	-.000083	-.000125272
11	t(1,2,5,4)	-.000394	-.000594025
12	t(1,4,5,2)	-.000311	-.000684597
13	t(1,2,4,6)	0.000471	0.000668472
14	t(1,2,6,4)	-.000032	-.000045835
15	t(1,4,6,2)	-.000503	-.001165859
16	t(1,2,5,6)	0.000042	0.000059901
17	t(1,2,6,5)	-.000119	-.000171470
18	t(1,5,6,2)	-.000161	-.000370043
19	t(1,3,4,5)	-.000286	-.000428692
20	t(1,3,5,4)	-.000136	-.000203735
21	t(1,4,5,3)	0.000150	0.000336885
22	t(1,3,4,6)	-.000243	-.000342500
23	t(1,3,6,4)	0.000232	0.000328815
24	t(1,4,6,3)	0.000475	0.001123183
25	t(1,3,5,6)	-.000646	-.000915411
26	t(1,3,6,5)	-.000338	-.000481909
27	t(1,5,6,3)	0.000308	0.000722169
28	t(1,4,5,6)	-.000676	-.001090975
29	t(1,4,6,5)	-.000046	-.000083121
30	t(1,5,6,4)	0.000630	0.001122178
31	t(2,3,4,5)	-.002078	-.003164956
32	t(2,3,5,4)	-.001570	-.002392419
33	t(2,4,5,3)	0.000508	0.001092601
34	t(2,3,4,6)	-.002196	-.003177527
35	t(2,3,6,4)	-.001110	-.001600296
36	t(2,4,6,3)	0.001086	0.002459301
37	t(2,3,5,6)	-.002271	-.003303745
38	t(2,3,6,5)	-.001746	-.002529552
39	t(2,5,6,3)	0.000525	0.001178919
40	t(2,4,5,6)	-.000158	-.000261774
41	t(2,4,6,5)	0.000850	0.001560693
42	t(2,5,6,4)	0.001008	0.001826380
43	t(3,4,5,6)	-.001028	-.001685281
44	t(3,4,6,5)	-.000902	-.001645544
45	t(3,5,6,4)	0.000126	0.000226723

Confirmatory Tetrad Analysis
List of Tetrads

id	tetrad	residual	tvalue
1	t(1,2,3,4)	-0.04608	-0.07383
2	t(1,2,4,3)	0.62592	1.10464
3	t(1,3,4,2)	0.67200	1.21012
4	t(1,2,3,5)	-0.01133	-0.01804
5	t(1,2,5,3)	0.70387	1.23224
6	t(1,3,5,2)	0.71520	1.28799
7	t(1,2,3,6)	-0.07344	-0.11810
8	t(1,2,6,3)	0.62256	1.11085
9	t(1,3,6,2)	0.69600	1.25303
10	**t(1,2,4,5)**	**4.37139**	**4.57783**
11	**t(1,2,5,4)**	**4.44179**	**4.62663**
12	t(1,4,5,2)	0.07040	0.24576
13	**t(1,2,4,6)**	**4.36256**	**4.57026**
14	**t(1,2,6,4)**	**4.31456**	**4.55763**
15	t(1,4,6,2)	-0.04800	-0.16041
16	**t(1,2,5,6)**	**4.65520**	**4.71137**
17	**t(1,2,6,5)**	**4.53120**	**4.64958**
18	t(1,5,6,2)	-0.12400	-0.42423
19	**t(1,3,4,5)**	**4.20672**	**4.45896**
20	**t(1,3,5,4)**	**4.29120**	**4.53392**
21	t(1,4,5,3)	0.08448	0.29774
22	**t(1,3,4,6)**	**4.23360**	**4.47734**
23	**t(1,3,6,4)**	**4.17600**	**4.43727**
24	t(1,4,6,3)	-0.05760	-0.19501
25	**t(1,3,5,6)**	**4.51008**	**4.62378**
26	**t(1,3,6,5)**	**4.36128**	**4.50955**
27	t(1,5,6,3)	-0.14880	-0.51493
28	t(1,4,5,6)	0.44608	0.72691
29	t(1,4,6,5)	-0.29792	-0.51113
30	t(1,5,6,4)	-0.74400	-1.30448
31	**t(2,3,4,5)**	**3.55488**	**4.06111**
32	**t(2,3,5,4)**	**3.57600**	**4.09343**
33	t(2,4,5,3)	0.02112	0.06639
34	**t(2,3,4,6)**	**3.49440**	**4.01722**
35	**t(2,3,6,4)**	**3.48000**	**3.98512**
36	t(2,4,6,3)	-0.01440	-0.04387
37	**t(2,3,5,6)**	**3.72312**	**4.16122**
38	**t(2,3,6,5)**	**3.68592**	**4.09784**
39	t(2,5,6,3)	-0.03720	-0.11618
40	t(2,4,5,6)	0.36912	0.61861
41	t(2,4,6,5)	-0.25088	-0.43884
42	t(2,5,6,4)	-0.62000	-1.11185
43	t(3,4,5,6)	0.30912	0.51209
44	t(3,4,6,5)	-0.21168	-0.36988
45	t(3,5,6,4)	-0.52080	-0.93122

Table 19.18 Ting (1995) macro to test significance of vanishing tetrads

```
/* Model A*/
%include 'z:\cta_glasgow\macros\CTA-
SAS2.mac';
%cta(CMATRIX=
4.000
2.248 4.000
2.160 2.040 4.000
1.280 1.520 1.440 4.000
1.136 1.404 1.344 2.744 4.000
1.480 1.720 1.620 2.920 2.940 4.000,
keept=ALL,
N=200, VARS=X1-X6, EXEC=FULL, AC=NORMAL);
RUN;
```

```
/*Model B*/
%include 'c: \CTA-SAS2.mac';
%cta(CMATRIX=
4.000
2.248 4.000
2.160 2.040 4.000
1.280 1.520 1.440 4.000
1.136 1.404 1.344 2.744 4.000
1.480 1.720 1.620 2.920 2.9404.000,
keept=
1 2 3 4 5 6 7 8 9 12 15 18 21 24 27 28 29
30 33 36 39 40 41 42 43 44 45,
N=200, VARS=X1-X6, EXEC=FULL, AC=NORMAL);
RUN;
```

Table 19.19 Significance tests of vanishing tetrads

```
Confirmatory Tetrad Analysis
     Test Results
 Matrix Used for the Test

                S

   4    2.248    2.16    1.28   1.136   1.48
2.248      4    2.04    1.52   1.404   1.72
 2.16   2.04       4    1.44   1.344   1.62
 1.28   1.52    1.44       4   2.744   2.92
1.136  1.404   1.344   2.744       4   2.94
 1.48   1.72    1.62    2.92    2.94      4

          CHI      DF     PROB

         27.84       9   0.0010

Confirmatory Tetrad Analysis
     Test Results
 Matrix Used for the Test

                S

   4    2.248    2.16    1.28   1.136   1.48
2.248      4    2.04    1.52   1.404   1.72
 2.16   2.04       4    1.44   1.344   1.62
 1.28   1.52    1.44       4   2.744   2.92
1.136  1.404   1.344   2.744       4   2.94
 1.48   1.72    1.62    2.92    2.94      4

          CHI      DF     PROB

         4.25       8   0.8342
```

trusting beliefs constructs and by Wilson et al. (2011) to decide on the directionality of the items for the mass media consumption information, Baumann, Elliot and Hamin (2011) on variety seeking and current behaviour constructs, and López, Santos and Trespalacios (2011) for the organizational learning construct. Finally, Gudergan et al. (2008) make compatible the CTA approach in a PLS path modelling framework.

The rationale of the CTA test lies in the properties of CTA that have been presented previously in this chapter but basically in one of them: Model A in Figure 19.4 (reflective indicators) implies that all tetrads are vanished, whereas the causal indicator Model B entails no vanishing tetrads. We will demonstrate this statement later in this section, but assuming this is true, as CTA tests the null hypothesis that all the non-redundant tetrad vanish, rejecting it would lend support to a formative indicators structure while not being able to reject it would suggest that the reflective conceptualization is feasible.

As pointed out, in model A all the tetrads should vanish. This fact was demonstrated previously in this chapter as model A is the same as depicted in Figure 19.1 and the algebraic demonstration holds. But what happens to model B? The latent variable can be written:

$$\xi = \lambda_1 x_1 + \lambda_2 x_2 + \lambda_3 x_3 + \lambda_4 x_4 + \zeta$$

where the disturbance ζ collects the effect of all the other variables that can influence ξ and are not in the model and makes ξ different from the simple linear combination of the indicators. The population covariance between each pair of indicators can be written:

$$\sigma_{ij} = E(x_i x_j)$$

but as all the observed variables are exogenous, there are no constraints on the covariance among formative indicators. That implies that the only possibility that any implied tetrad disappears:

$$\tau_{ghij} = \sigma_{gh}\,\sigma_{ij} - \sigma_{gi}\,\sigma_{hg}$$

is that the unlikely circumstance that the values of $\sigma_{gh}\sigma_{ij}$ and $\sigma_{gi}\sigma_{hg}$ cancel each other happens, or that one covariance at each side of the minus sign equals zero. In any other situation none of the tetrads implied by model B will vanish.

This result implies that models A and B, which are non-nested models in terms of traditional SEM models, are nested in terms of CTA and the tetrad test can be performed. Three empirical applications will follow. In the first of them we will apply CTA to infer the best configuration for the risk perception construct in e-banking adoption considered as an isolated construct, which

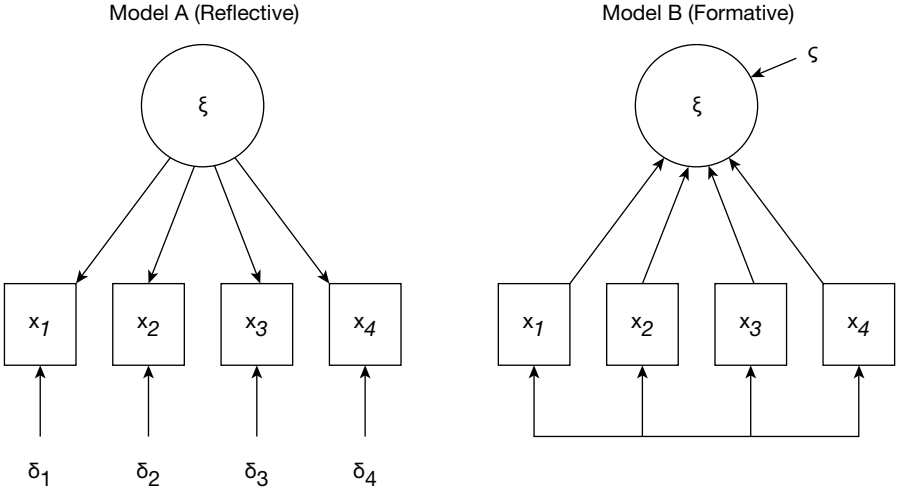

Figure 19.4 Reflective and formative latent constructs

makes it impossible to apply traditional SEM to decide, as it is an underidentified model. The second application will follow the same example but the perceived risk construct will be identified following one of the approaches proposed by Diamantopoulos and Winklhofer (2001) showing that, even if its estimation using traditional SEM is possible, as both models are not nested, a decision cannot be taken unless CTA is used. A final application will illustrate the use of CTA in the framework of a general SEM with structural relations arising from the influence of the formative construct, perceived risk, on another latent construct, attitude towards e-commerce.

Application 1

Following Aldás-Manzano et al. (2009), consumer perceived risk of using online banking has five different dimensions: *security risk* that consumers associate with lack of security of the Internet and potential loss resulting from fraud; *privacy risk* that has to do with the possibility that consumers' personal information (name, address, e-mail, phone numbers, etc.) will be disclosed (particularly) to direct marketers, either inside or outside of the company; *financial risk* that has to do with concerns that products and/or services will not perform as anticipated or that banks will not compensate in case of errors in transaction; *time loss risk*, the perception that the adoption and the use of the service will take too much time; and *social risk*, concerning the possibility of negative responses from the consumers' social networks.

There are conceptual reasons to consider perceived risk a formative construct. If risk is a reflective latent variable all the dimensions should have the same latent cause and should happen simultaneously provoking high correlations among the indicators, but why a consumer should experiment also reflects concerns regarding e-banking security and perceiving negative attitudes from family and friends (social risk). Why isn't a consumer afraid of making a mistake in entering an account number or monetary amount in the application (financial risk) but is quite sure it is always quicker to do this using e-banking than visiting the bricks-and-mortar office (no time loss risk). If indicators were not necessarily correlated, a formative approach would make sense.

Figure 19.5 illustrates the formative approach to risk measurement. The indicators used are all seven points Likert-type scales where the respondent expresses his/her agreement of the following questions: (R1) When I send data to banking web sites, I am worried that they will be intercepted and modified by unauthorized third parties like hackers (security risk); (R2) I am concerned that the banking operation does not provide the financial advantages listed on the web site (financial risk); (R3) I think using online banking services worsens the image my friends and relations have of me (social risk); (R4) When I use banking web sites I feel I waste a lot of time choosing the banking operation I need (time loss) and (R5) Using banking web sites increases the likelihood of receiving spam (privacy risk).

If the reflective approach is correct all the non-redundant tetrads should vanish, so the first step using the Ting (1995) macro is not necessary, as we know which tetrads should vanish in the case of a reflective latent variable: all of them. So we just need to apply the macro to the sample covariance matrix using the EXEC = FULL options as illustrated in Table 19.20. If the reflective model is plausible, we should not be able to reject the null hypothesis that states H_0: $\tau = 0$. If we are able to reject it, data would be supporting a formative configuration for perceived risk.

Results in Table 19.21 show five non-redundant vanishing tetrads. The program computes a simultaneous test on these five tetrads and gives gives a T statistic of 36.11 with 5 *df* and a *p* value < .001. In this case, a significant T statistic would lead to the rejection of the reflective indicator model in favour of the formative indicator configuration for the perceived risk construct.

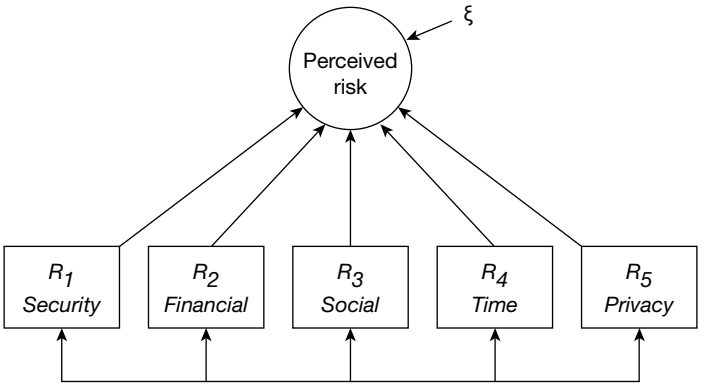

Figure 19.5 E-banking perceived risk as a formative construct

Table 19.20 CTA macro applied to the sample matrix

```
%include 'C:\CTA-SAS2.mac';
%cta(CMATRIX =
2.791
0.928 2.142
0.412 0.619 2.090
0.678 0.735 1.224 3.115
1.289 0.829 0.528 1.038 3.347,
N = 504, VARS = X1 X2 X3 X4 X5, EXEC = FULL);
RUN;
```

Table 19.21 Non-redundant vanishing tetrads and T test

```
        Confirmatory Tetrad Analysis
         List of Nonredundant Tetrads

         id      tetrad      residual

          1    t(1,2,3,4)     0.83305
          2    t(1,2,4,3)     0.71619
          4    t(1,2,3,5)     0.14844
          6    t(1,3,5,2)    -0.45634
         10    t(1,3,4,5)     0.06967

          Matrix Used for the Test

                        S

 2.791     0.928     0.412     0.678     1.289
 0.928     2.142     0.619     0.735     0.829
 0.412     0.619      2.09     1.224     0.528
 0.678     0.735     1.224     3.115     1.038
 1.289     0.829     0.528     1.038     3.347


             CHI        DF      PROB

           36.11         5    0.0000
```

Application 2

In the application 1 example we would never had been able to estimate the model depicted in Figure 19.5 using traditional SEM as it is an underidentified model. However, Diamantopoulos and Winklhofer (2001) demonstrate that model depicted in Figure 19.6, where we have added two reflective indicators to the formative construct (MIMIC model). The reflective indicators in Figure 19.6 have been used to provide an overall measure of perceived risk: (O1) I mistrust banking web sites and (O2) It is very likely that the online banking operation will not meet my expectations.

In this example we will first estimate model A in Figure 19.6 (reflective model) using traditional SEM in order to look for any indication of not being a plausible model (goodness of fit, low reliability caused by low correlation among indicators, small loadings). Model B (formative one) will be estimated afterwards in order to check if it can provide better fit to the data. However, we know that we will not be able to perform a statistical test based on the chi-square statistic difference, as those models are not nested.

Table 19.22 shows EQS 6.1 syntax to estimate both models while Table 19.23 summarizes the main results. We just want to call attention to one technical point. It will be noticed that we have increased the precision level of the implied covariance matrix of both models by using the option DIGITS = 8 in the /OUTPUT section. The reason relies in the fact that we are going to illustrate this application using the Hipp, Bauer and Bollen (2005) SAS macro for nested models and these authors indicate that inputting a model-implied covariance matrix with greater degrees of precision helps the sweep operator to find an independent set of vanishing tetrads.

It will be noticed that the reflective model exhibits poorer goodness of fit indices than the formative one. But what is more relevant, attending to traditional convergent validity criteria (Bagozzi and Yi, 1988) items R3, R4 and even R5 should leave the latent variable as it is not plausible to assume they are caused by the same construct as the other ones. Of course this decision would question the content validity of the scale. However, as formative reliability and convergent validity rules do not apply to formative constructs, the content validity integrity of the construct would be preserved.

The point now is whether or not CTA will be able to empirically detect the formative nature of the perceived risk construct. We will apply now Hipp, Bauer and Bollen (2005) SAS macro for nested models. We should remember that although the models depicted in Figure 19.6 are not nested according to SEM criteria, they are nested according to CTA criteria, as in model A all the non-redundant tetrads vanish, but only a subset of them will do in model B. In fact, in application 1 we also implicitly performed a nested test. As in application 1 model B latent variable indicators were all formative, the model implies no non-redundant vanishing tetrads, and the chi-square associated is 0 with 0 degrees of freedom, becoming the nested chi-square difference test the same as the non-nested chi-square test (Bollen, Lennox and Dahly, 2009).

But this is not the case in application 2 and model B will imply non-redundant vanishing tetrads making a nested test appropriate. Accordingly Table 19.24 shows Hipp, Bauer and Bollen (2005)'s macro syntax to perform the nested CTA test. Implied covariance matrices were obtained in Table 19.22 EQS syntax, as well as the sample covariance matrix. Technically it is very important to take into account that SAMPMAT1 is the sample matrix, IMPMAT1B should always be the matrix implied by the model with more vanishing tetrads (that is, the reflective one) and IMPMAT2B the matrix implied by the model with fewer vanishing tetrads (the formative one). In this syntax it can be noticed that *nesttest* = 1 indicates that a nested test is being performed (if = 0 then only the first matrix corresponding to the reflective model would be tested against the sample matrix, that is, a non-nested test like the one performed in application 1).

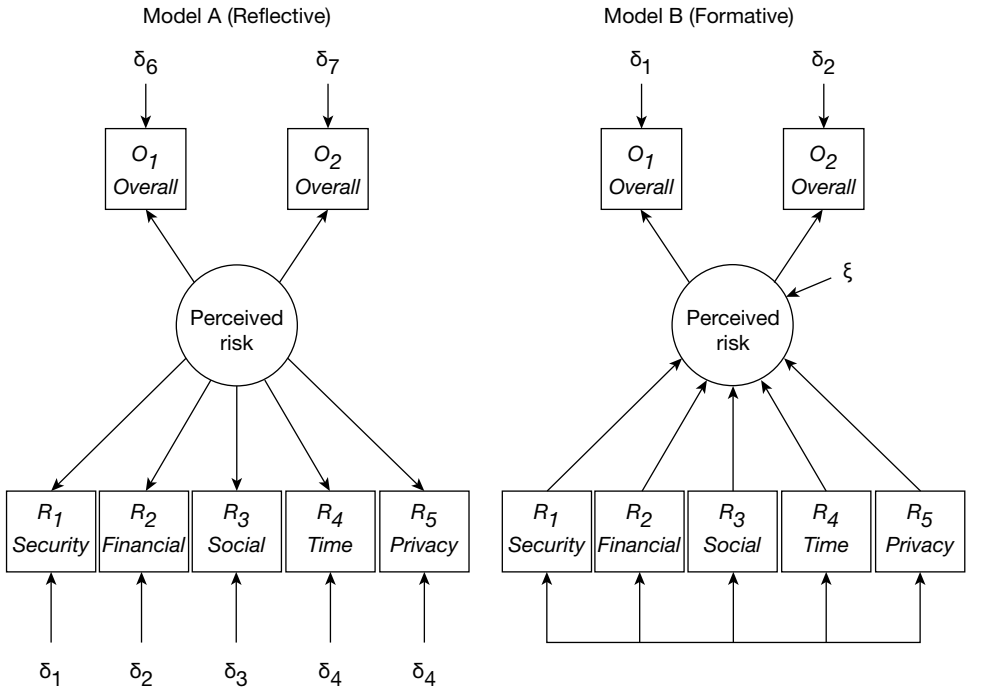

Figure 19.6 Reflective and formative conceptualizations of e-banking perceived risk

Table 19.22 EQS syntax to estimate reflective and formative models

```
/TITLE
Model A
/SPECIFICATIONS
DATA='C:\datos.ESS';
VARIABLES=7; CASES=504;
METHOD=ML; ANALYSIS=COVARIANCE;
MATRIX=RAW;

/LABELS
V1=R1; V2=O1; V3=R2; V4=O2; V5=R3;
V6=R4; V7=R5;

/EQUATIONS
V1 =    *F1 + E1;
V2 =    *F1 + E2;
V3 =    *F1 + E3;
V4 =    *F1 + E4;
V5 =    *F1 + E5;
V6 =    *F1 + E6;
V7 =    *F1 + E7;

/VARIANCES
E1 TO E7=*; F1=1;

/COVARIANCES
/PRINT
FIT=ALL; COVARIANCE=YES; DIGITS=8;
LI=132;

/END
```

```
/TITLE
Model B
/SPECIFICATIONS
DATA='C:\datos.ESS';
VARIABLES=7; CASES=504;
METHOD=ML; ANALYSIS=COVARIANCE;
MATRIX=RAW;

/LABELS
V1=R1; V2=O1; V3=R2; V4=O2; V5=R3;
V6=R4; V7=R5;

/EQUATIONS
V2 =    1F1 + E2; !Reflective indicators
V4 =    *F1 + E4;

F1=*V1+*V3+*V5+*V6+*V7+D1; !Formative
                           !section

/VARIANCES
 E2 = *;
 E4 = *;
 D1 = *;

/COVARIANCES
V1,V3=*; V1,V5=*; V1,V6=*; V1,V7=*;
V3,V5=*; V3,V6=*; V3,V7=*; V5,V6=*;
V5,V7=*; V6,V7=*;

/PRINT
FIT=ALL; COVARIANCE=YES; DIGITS=8; LI=132;

/END
```

Table 19.23 Model A reliability and convergent validity

Item	*Model A*					*Model B*		
	λ	t	CA	CR	AVE	λ	γ	t
R1 (Security)	.691**	16.17	.80	.81	.38		.545**	12.61
R2 (Financial)	.611**	13.86					.322**	7.90
R3 (Social)	.448**	9.63					.211**	5.12
R4 (Time loss)	.486**	10.58					.119**	2.83
R5 (Privacy)	.564**	12.59					.181**	4.53
O1 (Overall)	.757**	18.23				.724†		–
O2 (Overall)	.696**	16.35				.646**		14.25

Model A: $\chi 2(14) = 175.47$, $p < .01$; CFI = 0.843; IFI = 0.845; RMSEA (90% CI) = 0.151 (0.132;0.171)
Model B: $\chi 2(4) = 47.04$, $p < .01$; CFI = 0.958; IFI = 0.959; RMSEA (90% CI) = 0.146 (0.110;0.185)
** $p<0.01$; † = fixed for scaling; CA = Cronbach's α; CR = Composite Reliability;
AVE = Average Variance Extracted

Table 19.24 Hipp et al. (2005) macro syntax to test nested models A and B

```
%include 'c:\ctanest1.mac';
%ctanest1(SAMPMAT1 =
2.7906687
1.8484490 2.8677301
0.9284058 1.0732983 2.1422536
1.0015463 1.1124365 1.0738900 1.9677491
0.4123197 0.7860141 0.6190476 0.7417716 2.0900628
0.6777194 0.9240983 0.7345569 0.9612326 1.2235160 3.1149886
1.2894616 1.2576367 0.8289667 1.0601944 0.5284799 1.0382349 3.3465832,
IMPMAT1B =
2.7906693
1.4783529 2.8677305
1.0309023 1.1453253 2.1422537
1.1268200 1.2518892 0.8729820 1.9677493
0.7470760 0.8299962 0.5787827 0.6326341 2.0900630
0.9888221 1.0985745 0.7660708 0.8373479 0.5551574 3.1149890
1.1903293 1.3224475 0.9221846 1.0079869 0.6682902 0.8845421 3.3465832,
IMPMAT2B =
2.7906687
1.6545059 2.8677746
0.9284058 1.2224237 2.1422536
1.2230012 1.1124670 0.9036086 1.9677719
0.4123197 0.8714735 0.6190476 0.6441882 2.0900628
0.6777194 1.0719640 0.7345569 0.7923896 1.2235160 3.1149886
1.2894616 1.3270422 0.8289667 0.9809420 0.5284799 1.0382349 3.3465832,
N = 504, vars = 7, nesttest = 1, pchor = 0, lisrel = 0, mplus = 0, lowdiag =
1, reps = 1);
run;
```

When a nested test is performed, if we call T_M to the CTA T test of the model with more vanishing tetrads (reflective one), T_L to the T test of the model with fewer vanishing tetrads (formative one) and T_D to the difference $(T_M - T_L)$, then the decision criterion will be:

T_D $p > .05$ the model with more vanishing tetrads will be preferred (reflective)
T_D $p < .05$ the model with less vanishing tetrads will be preferred (formative)

Table 19.25 shows the results of the nested test. The highly significant chi-square difference value ($\chi^2(10) = 36.32; p < .01$) indicates that the data are best explained by the model with fewer vanishing tetrads, that is, by the formative model B depicted in Figure 19.6, confirming the results we advanced from the SEM estimation.

It must be noticed, as Hipp, Bauer and Bollen (2005, p. 84) point out, that "when using the nested test option, the estimated chi-square for the model with fewer vanishing tetrads and the estimated chi-square difference in the two chi-squares is accurate. However, to estimate the chi-square for the model with more vanishing tetrads, the researcher should specify this model in a non-nested test."

Application 3

CTA test application to help in the decision between the formative or reflective configuration for latent constructs is not restricted to a confirmatory factor analysis like applications 1 and 2 but can also be applied in the framework of a general SEM like the one depicted in Figure 19.7 (on page 374). In this case, both models, independently of their formative or reflective configuration of risk, propose the hypothesis that perceived risk in online banking will negatively affect the attitude of consumers to this channel configuring, thus, a general SEM model. Attitude to online internet banking has been measured with a reflective 4-tems latent construct being the indicators measured in a 7-point Likert-type scale: Using online banking (A1) is an idea I like; (A2) is an intelligent idea; (A3) is convenient; (A4) is appealing.

Once more, we take benefit of the CTA property that makes models A and B in Figure 19.7 be nested in terms of vanishing tetrads although they are not nested attending to SEM criteria. We will not detail again the process followed, as it is identical to application 2. Table 19.25 illustrates EQS syntax to estimate both models and get the sample and implied covariance matrices and Table 19.26 CTANEST1 SAS macro syntax (Hipp, Bauer and Bollen, 2005) to apply the CTA test. Results are summarized in Tables 19.27 and 19.28.

Table 19.25 CTA nested test results

```
   Model implied matrices are in correct order
            Models are tetrad nested

Tetrad Test for Model with more vanishing tetrads

          Chi-Square        df   p-value

           70.116786        14 1.8383E-9

Tetrad Test for Model with fewer Vanishing tetrads

          Chi-Square        df   p-value

           33.792993         4  8.217E-7

        Nested Tetrad Test for two models

          Chi-Square        df   p-value

           36.323793        10  0.000074
```

Table 19.26 EQS syntax to estimate SEM with reflective and formative latents

```
/TITLE
Model A
/SPECIFICATIONS
DATA='C:\datos.ESS'; VARIABLES=11;
CASES=504; METHOD=ML; ANALYSIS=COV;
MATRIX=RAW;

/LABELS
V1=R1; V2=O1; V3=R2; V4=O2; V5=R3;
V6=R4; V7=R5; V8=A1; V9=A2; V10=A3;
V11=A4;

/EQUATIONS
V1 =   1F1 + E1; !Risk reflective
V2 =   *F1 + E2;
V3 =   *F1 + E3;
V4 =   *F1 + E4;
V5 =   *F1 + E5;
V6 =   *F1 + E6;
V7 =   *F1 + E7;
V8 =   1F2 + E8; !Attitude
V9 =   *F2 + E9;
V10 =   *F2 + E10;
V11 =   *F2 + E11;
F2 =   *F1 + D2; !Structural equation

/VARIANCES
 F1 = *; E1 TO E11= *;  D2 = *;

/PRINT
FIT=ALL; COVARIANCE=YES; DIGITS=8;
LI=132;
/END
```

```
/TITLE
Model B
/SPECIFICATIONS
DATA='C:\datos.ESS'; VARIABLES=11;
CASES=504; METHOD=ML; ANALYSIS=COV;
MATRIX=RAW;

/LABELS
V1=R1; V2=O1; V3=R2; V4=O2; V5=R3; V6=R4;
V7=R5; V8=A1; V9=A2; V10=A3; V11=A4;

/EQUATIONS
V2 =   1F1 + E2; !Reflective indicators
V4 =   *F1 + E4;
!Formative indicators
F1=*V1+*V3+*V5+*V6+*V7+D1;
V8 =   1F2 + E8; !Attitude
V9 =   *F2 + E9;
V10 =   *F2 + E10;
V11 =   *F2 + E11;
F2 =   *F1 + D2; !Structural equation

/VARIANCES
 E2=*; E4=*; E8 TO E11=*;  D1=*; D2=*;

/COVARIANCES
V1,V3=*; V1,V5=*; V1,V6=*; V1,V7=*;
V3,V5=*; V3,V6=*; V3,V7=*; V5,V6=*;
V5,V7=*; V6,V7=*;

/PRINT
FIT=ALL; COVARIANCE=YES; DIGITS=8; LI=132;
/END
```

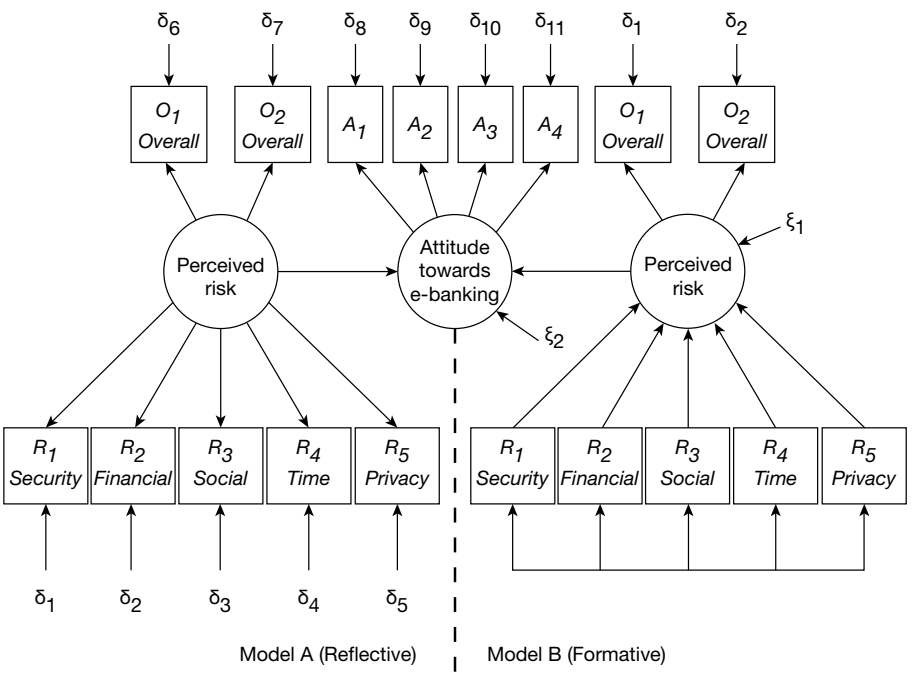

Figure 19.7 Influence of perceived risk of online banking on consumer's attitude

Table 19.27 Hipp et al. (2005) macro syntax to test nested models A and B

```
%include 'c:\ctanest1.mac';
%ctanest1(SAMPMAT1=
2.7906687
1.848449     2.8677301
0.9284058    1.0732983    2.1422536
1.0015463    1.1124365    1.0738900    1.9677491
0.4123197    0.7860141    0.6190476    0.7417716    2.0900628
0.6777194    0.9240983    0.7345569    0.9612326    1.223516     3.1149886
1.2894616    1.2576367    0.8289667    1.0601944    0.5284799    1.0382349    3.3465832
-0.1129493   -0.2782275   -0.1858965   -0.2888226   -0.3796586   -0.3420548   -0.3903918   1.7231808
-0.0056644   -0.1736407   -0.1070482   -0.2023415   -0.335637    -0.3570719   -0.1957383   1.3165846   1.5183029
-0.0027139   -0.1391966   -0.1087286   -0.1952728   -0.3704124   -0.3165294   -0.1939948   1.2428445   1.2486667   1.4144971
-0.0139717   -0.1139275   -0.1104208   -0.1735145   -0.2348133   -0.2790755   -0.2920532   1.2517948   1.1491606   1.1684338   1.6697868,

IMPMAT1B=
2.7906687
1.4522221    2.8677222
1.0207752    1.1391719    2.1422494
1.1207472    1.2507394    0.8791518    1.9677436
0.751948     0.8391643    0.5898533    0.6476220    2.0900606
0.9908284    1.1057518    0.7772392    0.8533599    0.5725487    3.1149843
1.180127     1.3170065    0.9257314    1.0163950    0.6819346    0.8985729    3.3465778
-0.2135917   -0.2383656   -0.1675485   -0.1839578   -0.1234236   -0.1626331   -0.1937043   1.7231806
-0.208977    -0.2332156   -0.1639286   -0.1799833   -0.120757    -0.1591194   -0.1895193   1.3070303   1.5183027
-0.202534    -0.2260253   -0.1588745   -0.1744342   -0.1170339   -0.1542135   -0.1836761   1.2667329   1.2393647   1.414497
-0.1943085   -0.2168458   -0.1524221   -0.16735     -0.1122809   -0.1479505   -0.1762166   1.2152874   1.1890307   1.1523713   1.6697867,

IMPMAT2B=
2.7906687
1.6417677    2.8677947
0.9284058    1.2207966    2.1422536
1.2126609    1.1207127    0.9017185    1.9677847
0.4123197    0.8897801    0.6190476    0.6572194    2.0900628
0.6777194    1.0873794    0.7345569    0.8031725    1.223516     3.1149886
1.2894616    1.3338339    0.8289667    0.9852114    0.5284799    1.0382349    3.3465832
-0.2080023   -0.1922309   -0.1546678   -0.1419877   -0.1127299   -0.1377646   -0.1689889   1.7231845
-0.2035313   -0.1880988   -0.1513431   -0.1389357   -0.1103068   -0.1348033   -0.1653565   1.3066518   1.5183023
```

Table 19.28 CTA nested test results

```
   Model implied matrices are in correct order
             Models are tetrad nested

Tetrad Test for Model with more vanishing tetrads

          Chi-Square        df   p-value

           89.311312        43 0.0000434

Tetrad Test for Model with fewer Vanishing tetrads

          Chi-Square        df   p-value

           65.081243        33 0.0007197

        Nested Tetrad Test for two models

          Chi-Square        df   p-value

           24.230069        10 0.0070126
```

Once again, the model with the formative configuration for e-banking perceived risk construct better explains the data, although it has been tested now in a general SEM framework.

8. Limitations of CTA

Although this chapter has explored a very useful tool to deal with some unresolved issues in today's use of SEM in marketing and management research, such as statistical tests to empirically decide on the formative or reflective nature of constructs, it is not a tool free of drawbacks that should be presented.

Focusing on the application of CTA to decide between the formative or reflective nature of a construct, Bollen and Ting (2000) highlight some limitations. First, as happens in SEM models, there are also equivalent models from a CTA perspective that, differing in the composition of causal and effect indicators, cannot be tested, as they are not distinguishable. Second, there are some mixed models (those where the construct combines formative and reflective indicators) that are not nested to other mixed models in terms of vanishing tetrads not being possible by comparing them. This point also forces us to take into account the same precautions as when models are compared in traditional SEM: a favourable test statistic should not be confused with proof of the validity of a model since other models can have a fit as good as or better than the ones tested (Bollen and Ting, 1993).

Focusing on the differences between CTA and SEM methodologies, the main disadvantage of CTA is that it is not a parameter estimator tool. Of course, as Bollen and Ting (1993) indicate vanishing tetrads are parameters that are estimated, but the researcher usually focuses on the coefficients, variances and covariances parameters that are part of the model structure. That is why we strongly agree with those authors when they point out that CTA is a complement to and not a replacement for traditional procedures.

Focusing on the statistical properties of the T statistic, Bollen and Ting (1998) found that the test statistic is adversely affected by having a small sample size combined with a model with many vanishing tetrads. That result led the authors to propose a bootstrapping procedure for computing the *p*-value of the CTA test statistic.

Notes

1 Models A and B are nested in terms of vanishing tetrads, as the vanishing tetrads of model B (τ_{1342}, τ_{1423}) is a subset of the vanishing tetrads of model A: ($\tau_{1234}, \tau_{1342}, \tau_{1423}$).
2 Hipp, Bauer and Bollen (2005) provide a newer SAS macro that improves the Ting (1995) macro in many different ways: can be applied when data come from dichotomous, ordinal or censored observed variables or pull random draws of vanishing tetrads to assess the sensitivity of the results to that selection. Being preferable to the Ting (1995) macro, it has the didactical problem of automating the procedure of determining the vanishing tetrads implied by the model, which wouldn't allow us to illustrate the empirical method we are describing (although it is the same method the macro uses).
3 The SAS macro can be downloaded from http://www.cuhk.edu.hk/soc/ting/CTA-SAS2.mac (accessed May 9, 2011).
4 This section follows directly the presentation of the statistic made by Bollen (1990) and also by Bollen and Ting (1993; 2000). The extension of the test to categorical variables follows the Hipp and Bollen (2003) paper.
5 This macro can be downloaded from http://www.unc.edu/~johnhipp/ctanest1.htm (accessed May 11, 2011) altogether with complete documentation regarding its use
6 It should be taken into account that the difference of two χ^2 distribution follows a χ^2 distribution with degrees of freedom being also the difference of the degrees of freedom of the original distributions.

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20

The future applications of agent-based modeling in marketing

William Rand

Abstract

Agent-based modeling (ABM) gives researchers the ability to model, at a natural level, large markets with many interacting components. The agents within ABM can exist at multiple levels, be heterogeneous in both properties and actions, and can even adapt their actions over time. This provides a powerful ability to represent real-world business phenomena at a rich level of detail. Within marketing, ABM has already been successfully used to model the diffusion of information and adoption of products, but there are many other areas of interest to marketing researchers that could benefit from an ABM approach. For instance, retail location decisions, inter-firm relationships/strategy/competition, marketing mix models, and servicescape design could all benefit from being analyzed using ABM. In this chapter, we explore this method, potential future applications within marketing, and future research questions in the context of this methodology.

Key words

Agent-based modeling, heterogeneity, adaptive, dynamic, retail locations, inter-firm relationships, marketing mix, servicescape.

Introduction and motivation

Marketing is fundamentally about the interaction of consumers (both individual consumers and other businesses) in a marketplace. It deals with how to reach those consumers, how they interact and how to tap in to the needs and desires that those consumers have. Of course, from a marketing perspective there is a deep desire to develop models and detailed understandings of how consumers and businesses operate in these markets. If in fact the basic entity within marketing is a consumer or business, then it would make sense when building a model, to construct that model such that the consumer or the business was the basic unit of representation. By building a model where the basic unit corresponds in a natural ontological way to the entities in which we are interested in the real world, we not only create models that more closely mirror reality, but we also create models that are easier to explain to others.

Agent-Based Modeling (ABM) gives us the ability to create such models. In this chapter we will discuss what ABM is, and how to identify problems where ABM could be useful. After that, we will discuss what role ABM plays among all of the different methods that marketing scientists have at their disposable for understanding complex markets, and some notable application areas. There are many additional topics that could be discussed when talking about the role of ABM in marketing. For instance, a longer discussion is warranted on the integration of ABM with other methodologies, and publication and reviewing standards of models created using ABM, but these topics are beyond the scope of this chapter. Moreover, this chapter is not meant to serve as a reference on how to construct agent-based models with rigor. Rand and Rust (2011) cover that topic in detail. Instead, the primary focus of this chapter is on exploring several application areas in marketing where ABM could play a critical role in bringing new and different insights.

What is ABM?

The basic concept of ABM is that most of the complex problems of the world can be modeled using descriptions of agents, environments, and agent–agent and agent–environment interactions. Of course, this begs the question, what is an agent? For the purposes of this description, an agent is an autonomous computational entity with its own methods and properties. An agent can be an individual consumer or a company. An agent can even be the entire government of a country. Agents should be described at whatever level of modeling the researcher is interested in investigating. In other words, if the researcher wants to create a model of consumers responding to one particular firm's marketing message, then a set of agents can represent the consumers, and a different agent could represent the firm. On the other hand, if a researcher wants to create a complex model of consumers interacting with competitive organizations in a government-regulated marketplace then there would be agents for the consumers, agents for the firms, and at least one agent representing the government. Clearly then agents can take on many different traits and characteristics and the art of agent-based modeling, just like any modeling approach, is in deciding how to construct the model and at what level to build the representation of the phenomenon at hand.

ABM has already been used successfully to model the diffusion of information and new product adoption within the marketing (Garcia 2005), which is discussed in detail below, but there are several other areas of marketing for which ABM would be a natural approach to consider. That naturally brings up the question of what criteria should be used to determine if an application area is appropriate for an ABM approach. Different methodologies are better suited for exploring different problems and ABM is no exception.

Briefly the six main hallmarks of problems that indicate that ABM is an appropriate methodology are: (1) a medium number of agents, (2) complex but local interactions, (3) heterogeneity, (4) rich environments, (5) temporal aspects, and (6) adaptability (Rand and Rust 2011):

1. Medium number of agents – Agent-based modeling works best when there are not an uncountable number of agents; in those cases, something such as mean field theory from physics often works quite well. ABM often does not work well when there are a very small number of agents; in those cases, something that gives a more rich description, such as ethnographic studies, often works better. Instead, ABM works well when there are a medium number of agents (Casti 1995); a specific number is hard to pick out, but the qualitative guideline is that ABM works well when the number of agents is large enough

that no one agent determines the final outcome of the system every time, but small enough that occasionally a fraction of the population can significantly affect the outcome. A medium number of agents is useful to model because ABM gives us the ability to track and monitor the effect of every agent in the system, and to examine how path dependent processes arise from a small group of agents taking a set of actions. For instance, ABM is useful for studying interactions within a market, where a small group of consumers can have a large and vocal effect on a brand's reputation.

2. Complex but local interactions – If all interactions among agents are exactly the same, then it is often the case that a different methodology, such as differential or difference equations, can be used to represent the phenomenon at hand. It is also the case that ABM is rarely useful when all actions are global in effect, essentially having the same impact on the entire system at the same time. On the other hand, when the actions are local, and potentially complex, such as history dependent actions, or actions which involve interactions with the environment, such as stigmergy, then ABM often provides a powerful tool for understanding. One of the fundamental design philosophies of good ABM is that interactions are rarely global in scope; instead agents find out information and transact among local individuals in their physical or social neighborhood. ABM enables this by providing mechanisms for allowing communication between agents on a one-on-one basis. Moreover, since each agent is represented individually, ABM enables these agents keep a record of their interactions, potentially with all other agents in the model, creating a very complex set of interactions. For instance, agents can build up trust relationships which they use to determine the quality of information they receive from others based on past experiences.
3. Heterogeneity – If all individuals in the system are exactly the same as every element of the system, then equation-based modeling often provides a more universal and generalizable analysis of the problem at hand. On the other hand, when the agents and individuals in the system differ greatly from each other, each having their own sets of properties and behaviors, then ABM can be a powerful tool. There are other methods of modeling that allow for individual-level representations, but ABM is one of the few methodologies that allows for agents to not only have differing properties but different ways of interacting. In ABM it is possible to have agents that carry out very different tasks in very different ways. For instance, some consumers may gather information only from their social networks, while other consumers receive no information from their social networks but gather all the research they need about a product from their own research.
4. Rich environments – Agent-based models can be constructed in which the agents inhabit almost any type of environment. For instance, agents can be placed in simple geometrical setups, such as planes or tori, but they can also be embedded in much more complex sets of interaction neighborhoods, such as social networks, or even real geographical data. Moreover, the data for these environments can either be simulated based upon theories or subject-matter expertise, or they can be drawn from real-world data, which allows for comparison to empirical analysis. GIS (Geographical Information Systems) analysis also allows for examination of large-scale real geographical data, but since GIS does not easily enable dynamic models, while ABM can include arbitrary interaction landscapes and is dynamic, it is sometimes easier to include such data in an ABM framework. This means that ABM can be used within marketing to study things like retail location placement.
5. Temporal Aspects – Agent-based modeling is, in many ways, a model of process, that is, the fundamental aspects of agent-based modeling are how agents take actions in a dynamic and changing world. As a result, if the model includes an emphasis on dynamics then ABM is often an appropriate framework by which to view it. If the model is not dynamic then there

are a host of other methodologies that can help solve the problem being addressed. Game theory for instance, will enable many of the same understandings as ABM, but for analytical tractability often requires a static scenario. In fact, non-static game theory approaches, such as iterative games, are often indistinguishable from simple agent-based models. This makes ABM useful to marketing scientists, since many marketing research questions are interested in how marketing efforts are going to play out over time.

6. Adaptability – Since ABM is a computational approach and not a mathematical approach (which we will discuss in more detail below), it is possible to incorporate methods from artificial intelligence and machine learning directly into your agents. This allows the agents to change not only the tactics they employ in the model, but also the very strategies they are using over time. If an agent, when faced with the same conditions as they saw previously in a model run, takes a different action based upon learning, then that agent is an adaptive agent. This is a powerful ability that is difficult to include in almost any other modeling methodology. Within marketing there are questions about how individuals might alter their purchase heuristics on the basis of past behavior and ABM enables explorations into these questions.

The first four of these features are indicative, i.e., the more strongly these hallmarks appear the more powerful the use of ABM will be. The fifth aspect, temporal aspects, is, in many ways, a necessary condition. ABM is, almost by definition, a model of process; an ABM without dynamics becomes a computational model of a static situation, similar to a numerical examination of a game theory solution. The sixth aspect, adaptive agents, is, in many ways, a sufficient condition. There are very few other modeling paradigms that will allow researchers the ability to construct a representation of the individual where the agents can change not only their properties over time, but also the very rules by which they operate.

The role of ABM

In the above discussion, several other methodologies were canvassed that can complement and work with ABM, such as game theory, equation-based modeling, and empirical modeling. In fact, ABM is not meant as a substitute for other methods. Instead, ABM serves as a complement to these other methodologies. In many cases the best research employing ABM also employs either an analytical or empirical model. For instance, within the context of new product development, it might be useful to start with a game theory model of how two organizations might interact with one or two design variables while competing for a set of homogenous consumers, and then break some of the assumptions of that model to create an ABM with heterogeneous consumers, multiple competing firms, and multiple products. Eventually this model could probably be compared to a real-world scenario where there is actual empirical data to validate results. This allows ABM to serve as a bridge between analytical modeling and empirical modeling. Moreover, since most ABMs are fundamentally written at the level of articulating consumer behavior, it is also possible to start with a consumer behavior experiment, and then see how a system would play out if millions of agents acted in the same way as a group of a hundred undergraduates participating in an experiment. Again, if planned carefully this could allow ABM to serve as a bridge between consumer behavior experiments and empirical models.

One of the biggest differences between ABM and empirical modeling and ABM and game theory or many of the other approaches that employ math and statistics is that ABM is fundamentally not a mathematical approach. Instead, it is a computational approach. In many situations, "numerical approximations" are substituted for problems that are analytically

intractable, and in its simplest and least powerful format ABM can be used in the same way, creating numerical approximations for complex problems. However, the more powerful and interesting use of ABM is as its own framework, which requires rethinking the problem in a computational framework instead of a mathematical framework. This means moving away from notions such as optimization (though ABM can optimize) and equations (though ABM can use equations) to thinking of heuristics and rules. Instead of asking what equations or utility functions agents should use, the more natural ABM way to think of a problem is to think of what rules (e.g., if-then evaluations), heuristics (e.g., buy what my friend tells me to buy) or procedures (e.g., first I search online then I ask my friends) an agent would use when presented with data about the world and asked to make a decision.

In some sense, the computational framework is a more natural representation. For example, it is clearly not the case that every consumer out there, when making a purchasing decision, considers every single product that they can possibly purchase, all of the features of that product, and then constructs a part-worth utility model of what that product would do for them. It is much more likely that consumers take advice from their friends and then go in and buy whatever they happen to see, taking into account this advice. Of course more perfectly rational representations are often useful and many times will arrive at the same modeling solutions that an ABM will generate, but it is more natural and easier to understand if the consumer is making decisions based on limited information and social networks.

Of course, to validate models that are this detailed and can represent such complex interactions, it is useful to have empirical data that is represented at the individual and consumer level. It is only recently that data has become available in large quantities at the individual level. Going back to the advent of scanner data (Guadagni and Little 1983), and later followed by clickstream data (Montgomery et al. 2004), and now with the rapid growth of social media data (Trusov, Bucklin & Pauwels 2009), app data (Trusov, Rand & Joshi 2013) and geolocation data (Rand 2012), there is now an increasingly large amount of data about how individual consumers behave in the complex world of marketing and purchase interactions.

This new growth of data has created a new field of study, known in some places as data science (Nielsen and Burlingame 2012). The idea behind data science is that data scientists can combine and analyze multiple large-scale datasets to tell a single narrative about a phenomenon that they are interested in studying, and that this narrative can be described and visualized in such a way that it is understandable to people who are not statisticians, mathematicians, or computer scientists. ABM provides a powerful complement to data science since if the data scientist has done their job well, they have in many ways laid out the groundwork for the construction of an ABM. In fact, many data scientists make use of ABM to construct predictive models of what would happen in different scenarios. Data science is primarily driven by descriptive analysis of the system at hand, but once a model has been created based on that analysis then ABM and other modeling methods can be used to create predictive models describing what is likely to happen in the future, even if some elements assumed in the descriptive model are altered. Since data science relies heavily on individual-level data and since it requires a methodology that makes no assumptions about the relationship between entities in the system, ABM provides a good methodology for creating representations of data science driven models.

One natural application of data science and ABM is in the world of marketing analytics (Wu and Coggeshall 2012). Marketing analytics is the continual examination of marketing data in such a way as to better understand, scientifically, what is going on with consumer interactions with a firm or organization, and the construction of models that will help the firm or organization make better marketing decisions in the future. Marketing analytics can be as simple as calculating the clickthrough rate of a particular promotion or coupon, or as complex as figuring out how

to craft social media targeting and messaging to maximize spread through a social network. Since ABM provides the ability to simulate multiple different what-if scenarios, models can first be validated against real-world data and then predictive modeling scenarios can be run to optimize marketing policy in the future. As new data is collected, these models can be continually updated and improved, allowing for a greater improvement in the analytics and the process continued.

Applications of ABM in marketing

Now that we have discussed the role ABM can play in general in helping scientists to understand marketing data, we can examine a few applications in particular, where ABM could potentially play a pivotal role in developing new understandings in the near future within the domain of marketing. This is not meant to be an exhaustive list, but rather highlights some areas that seemed to have the lowest hanging fruit within the marketing space. The list is inspired in part by Table 2 in Rand and Rust (2011).

Diffusion of information and innovations

One area where ABM has already been used extensively is the study of diffusion of information and innovations across networks. Since the earliest days of marketing research, it has often been shown that what consumers say about a product has a much larger impact on the decision of someone to purchase a product than anything we can say as marketers. Even the original Ryan and Gross (1943) studies of hybrid corn diffusion showed that word-of-mouth had a large impact on innovation adoption. As a result, understanding how information diffuses and, as a result, how innovations and products diffuse through a market is of vital interest to marketing scientists.

ABM provides a unique method by which this problem can be studied. First of all, ABM allows for individual-level heterogeneity at the level of the adopting agent. This means that multi-segment populations, such as the technology adoption lifecycle (Rogers 2003), which uses segments of consumers, such as early adopters and laggards, to describe product adoption, can be easily modeled using ABM, since the properties of each segment and the adoption decision rule can be modeled separately. Two-class models, such as the asymmetric mixed influence model of Van den Bulte and Joshi (2007) can also be easily incorporated into an ABM, by taking advantage of individual-level heterogeneity. In addition, the ABM framework allows for consumers to be embedded in a real-world social network, and so different agents can have a different number of friends and those friends can be connected to different communities, allowing for a very granular model of the interaction topology of the social communication process.

In fact, studying the effect of social networks on the adoption process has been an area of heavy research within marketing that has taken advantage of ABM. For instance, Watts and Dodds (2007) used ABM to question the influential hypothesis. They argued that if you look closely at simulations of the diffusion process, in most cases global cascades were not caused by influentials, or at least were not caused by them disproportionately enough to justify targeting influentials above and beyond a random set of individuals. They were able to carry out this analysis because agent-based modeling provided them with the ability to precisely control how influential individuals are and to record which individuals talked to which other individuals. Goldenberg, Libai and Muller (2010) examined how social networks can actually create a "chilling effect" early in innovation diffusion, as consumers wait to see what standards are adopted by their friends. They also used an aggregate model, as well as an agent-based model,

but the agent-based model allowed them to dive into exactly why individuals did not adopt early on, which is not obvious from the aggregate model. Stephen et al. (2012) use an ABM to study whether high levels of activity (pumps) or a high number of followers (hubs) are more important in influencing social networks. Though they start by investigating this phenomenon within aggregate data, they construct an ABM to examine causal mechanisms that can give rise to the behavior observed. These are just a few of the uses of ABM within marketing to understand the diffusion of innovation and information. Kiesling et al. (2012) and Garcia (2005) provide a more comprehensive survey of how ABM has been used to understand information and innovation diffusion.

There has also been a substantial body of work outside of the marketing literature that has used ABM to understand the diffusion of innovations and information. For instance, Berger (2001) used an agent-based model that was embedded in a spatial setup to understand technology diffusion in the agricultural industry. This enabled him to examine the effect of both spatial and social influence on innovation adoption, something that would be difficult to examine in many other frameworks. Deffuant, Huet and Amblard (2005) examined how societal and individual benefits interplay in the adoption of innovations, and how a small set of extremists, in terms of adoption proclivities, can upset the spread of innovations.

As a result of all of this research, ABM has already garnered new insights into the underlying phenomenon of diffusion. For instance, we now know that the structure of social networks can substantially alter diffusion processes (Rahmandad and Sterman 2008), and that structural properties of individual nodes and their decision to adopt or not adopt a particular product can have a dramatic effect on diffusion (Stephen et al. 2012).

However, there are still many open questions in this space for which ABM would provide a natural lens for examining the problem at hand. For instance, there is clearly an interaction between social and spatial diffusion, but what is the best way to model this? Are there optimal strategies for increasing or dampening the diffusion of information in a network (Stonedahl, Rand and Wilensky 2010)? What role does trust play in the diffusion of information (Sharara, Rand, and Getoor 2011)? ABM provides a rich lens to examine these questions through since it allows for the natural inclusion of network properties in agent's decisions and also has the ability to represent individual-level heterogeneity in a robust manner.

Retail location decisions

Since the creation of the Hotelling (1929) model, marketing has had an interest in understanding where to optimally locate businesses based on market needs and competitive pressures. Decisions about where to locate a business, though, are not made in a vacuum; they must take into account the local population and its individual characteristics. Moreover, for many non-destination businesses, such as grocery stores, gas stations, convenience stores, features such as local commuter patterns and foot traffic must also be taken into account. In addition, deciding on a location is really only a first step. Many other marketing decisions are also location-sensitive. For instance, prices for items, such as food, gas, and groceries, have to take into account spatially local price competition as well.

Moreover, these are not static decisions; because of competitive pressures a firm's decision to locate in a particular geographic place will often cause competitors in the neighborhood to change their prices or potentially even construct new retail locations themselves. Commuter patterns can also be altered by the placement of a firm's or competitor's retail locations and accompanying prices. This can result in local price wars as competitors fight for consumer purchases.

One of the advantages of ABM is the ability to easily integrate realistic geography with heterogeneous agents (Brown et al. 2005b, Rand 2012). This is a powerful ability because it allows complex agent-level decision making based upon real-world features. Because of this it is easy to create geographically aware models of retail locations and consumer movement patterns. This enables a very robust and rich modeling framework that can be used to explore the dynamic effects of making a particular retail location decision. Moreover, an agent-based model can include both a firm's decisions as well as those of its competitors enabling a very dynamic model.

Heppenstall, Evans and Birkin (2005, 2006) built a model that illustrates this ability quite well. They examined petrol price setting in a spatially influenced retail market. They used a geographic environment drawn from West Yorkshire, UK. Petrol stations were represented as full agents in the model that responded to consumer demand. They compared and contrasted two models, one where consumer agents were basically static and represented by their home locations, and another model where the agents were represented by a statistical estimate of their path to and from work. They found that the more dynamic model was a better representation, i.e., more valid, model.

Outside of marketing applications the combination of ABM with geographic information systems (GIS) based data has been used extensively in a number of different contexts. For instance, the Sluce project (Brown et al. 2005a) used a combination of ABM and GIS to model suburban sprawl, and examined how different policy options could affect its ecological impact. Irwin and Geoghegan (2001) survey a number of different ABM and GIS models that explored land-use change. In fact, this has become such a widespread research methodology that several researchers have attempted to develop frameworks to formalize how to integrate ABM and spatially explicit data (Parker et al. 2008, Brown et al. 2005b).

As a result of all of this work, researchers have learned that spatially explicit decision-making in agents often leads to path dependent outcomes, and as a result taking spatial considerations into account when building a model is necessary to capture the full complexity of the underlying phenomenon. However, there are still a number of open questions with retail location decision-making when it comes to marketing. For instance, is location still as important in a world where so many retail decisions are now made online? Is there a class of retail businesses for which more robust models of consumer spatial patterns make a huge difference? How do modern commuting and driving patterns affect retail locations? What is the best competitive strategy in the face of competing local businesses? As consumers turn away from global and national brands to more bespoke solutions how will this trend affect spatial decision-making by retail firms? Since ABM enables the combination of spatially explicit data and complex decision-making in agents it provides a suitable model for exploring these questions.

Retail and servicescape design

Making spatially aware decisions about retail locations is important, but there is also the matter of space within a store. Being able to model how consumers move through a store and how those movements influence their purchasing decisions is very valuable in designing store layouts and more generally looking at the whole question of servicescape design (Bitner 1992). Consumers are not isolated in the servicescape context; they also interact with other consumers, servers, and other firm representatives. In the end, good servicescape design can result in longer stays by consumers, a better brand reputation, and eventually higher revenues.

This question has already been explored within the marketing context, but the current state-of-the-art research within marketing has not employed ABM. For instance, Larson, Bradlow and Fader (2005) and Hui, Fader and Bradlow (2009) have explored using RFID-enabled shopping

carts and other technologies to understand how individuals move through grocery stores. Bitner (1992) has discussed in detail the effect of physical surroundings on customers and employees.

ABM makes building models of within store environments even easier, and it allows for social interactions between agents as well. Moreover, the agents can have heterogeneous properties, some of them may want to linger and browse, while some agents may move into the store, make their purchase, and leave immediately. Being able to represent these different actions and abilities makes ABM a suitable tool for this problem. In some ways it takes queuing theory (Little 1961) and discrete event simulations (Cassandras and Lafortune 2007) and adds both a spatial and agent-interaction capability allowing for a more rich description of the underlying system.

Outside of the marketing context, there has been a significant amount of work done on using ABM to understand pedestrian and consumer movement. ABM has been used to understand both the development of cities and the pedestrian patterns of residents of city environments (Batty 2007, Schelhorn et al. 1999). Some of this work has involved modeling complex events, such as the Notting Hill Carnival in London (Batty, Desyllas and Duxbury 2003). There have even been efforts to realistically model, within ABM, all aspects of pedestrian movement, including route planning and wayfinding, sensing of objects, and physical steering (Torrens 2012). Some of these models include using evidence from closed circuit cameras and other devices to validate the models (Batty 2003), in much the same way that the RFID shopping carts have been used within grocery layout design. All of this work could be built upon with a marketing context to start to build a comprehensive model that would be useful for designing and examining servicescapes.

Inter-firm relationships/strategy/competition

Besides building modeling consumer markets and environments, it is often useful to also look at firm–firm interactions. There are many times when examining how firms compete with each other, how they choose different strategies and how they cooperate is of interest to marketing scientists. Pricing is a classic example of how firms often need to create specific marketing strategies that take into account competition. Many models of pricing assume a static environment, but pricing is a dynamic decision that needs to take into account competitive forces, consumer demand, and supplier capabilities among other things. As a result, developing a fixed strategy for pricing is often not very useful. It is also the case that inter-firm negotiations often have a strategic angle to them and deciding what is the best way to approach these negotiations can be difficult, especially in complex markets where there is a whole web of interdependencies between firms.

ABM enables complex models that can account for many of these intricacies and difficulties. For instance, though many traditional models focus on one or two firms, ABM enables modeling a large number of firms with multiple heterogeneous characteristics. Moreover, these firms can be embedded in a supply network that is as complex as necessary to represent the system at hand. In addition, since ABM is a model of process the model can represent as many possible inter-firm dynamics as desired by the researcher. Each firm being modeled can have a very different strategy by which it makes its decisions and these firms can also evolve their strategies over time within the ABM context.

There has been past work in the marketing context that has used ABM to explore some of these questions. For instance, Hill and Watkins (2007, 2009) and Watkins and Hill (2009) use agent-based models to explore business-to-business relationships and decision-making, looking at both profit and moral implications of decisions in these contexts. Wilkinson and Young (2002) use an ABM to explore cooperation within firm relationship networks. Tay and Lusch (2005)

use ABM to evaluate the impact of different environments on a firm's strategy, and Mark, Midgley and Cooper (1997, 2006) and Midgley et al. (1999) look at the evolution of firm strategies using ABM and evolutionary computation.

Besides this work in marketing there is work in other areas that has examined how firms relate to each other using ABM. For instance, Axelrod (1997) examined the classic Prisoner's Dilemma model and showed how evolution of cooperation can be used to explain inter-firm dynamics. Barr and Saraceno (2002) used ABM combined with neural networks to examine how processing and learning of information by a firm can influence firm performance. Prietula, Carley and Gasser (1998) survey how computational modeling and ABM are being used to gain insights into organizational behavior.

ABM is a natural fit to explore these questions because it provides a way to represent multiple heterogeneous firms engaged in complex interactions and environments. There are still many questions that could be explored within the space through the lens of ABM. For instance, what are the optimal pricing strategies in the highly competitive digital marketplace? Do the benefits of tapping into a pool of talent through open source strategies work well when your competitor could steal all of your IP? Can we create meta-rules for how to engage in strategic decision-making in the face of competition, i.e., rules for pricing that take into account future competitive actions? ABM allows for multiple, adaptive, heterogeneous agents involved in complex relationships and so provides one powerful method that can answer some of these questions.

Marketing mix models

One particular element of strategy that is in many ways at the heart of marketing decisions is marketing mix. Examining the role of different elements such as media and advertising, trade promotions, and pricing on revenue and profits is often central to marketing. The problem with many models is that they estimate the impact of different aspects by simply examining the aggregate impact of tweaking one element of the marketing mix on the response in sales. However, this often fails to take into account the fact that there are clearly interactions between the different elements, i.e., decreasing price and increasing advertising may result in greater multiplicative revenue than either does alone. Moreover, many elements of the marketing mix feature non-linear response functions that often vary by consumer. For instance, some consumers have different tolerance levels for advertising compared to others.

Taking both these nonlinearities and this heterogeneity into account in a single model can often be difficult. However, ABM provides a method to unify as many aspects of the marketing mix model as desired simultaneously. Since the focus is on the individual consumer's response, if that model is assumed to be correct, i.e., that consumers really do react to the elements of the marketing mix as described, then the model can predict aggregate patterns of behavior even for conditions that are outside the previously explored set of interactions. This is true even if each of these consumers has a heterogeneous set of characteristics and responses.

Within the marketing context, ABM has been used to explore marketing mix in the past. For instance, Delre, Jager, Bijmolt and Janssen (2007) looked at the targeting and timing of promotional activities to encourage the takeoff of new products. North et al. (2010) used ABM to explore marketing mix optimization for a consumer packaged goods company. At a different level, and more within the context of B2B commerce, similar questions have also been explored within the context of supply networks (Parunak, Savit and Riolo, 1998), though within that work the emphasis was on comparing ABM to equation-based modeling (EBM).

There are also two cutting-edge companies that have created products that use ABM to understand marketing mix conditions. ThinkVine (2010) builds custom-tuned models to create

synthetic populations that accurately represent underlying market conditions, and Concentric (Silverman, Duzevik and Jones-Rooy 2011) has built a commercial software product that uses an ABM to facilitate strategic decision-making in the marketing mix.

In general ABM enables a richer fidelity of marketing mix models, because agent-based models can incorporate heterogeneity and complexity into the decision-making of the modeled consumers. Moreover, since the strategies can be tested in competitive environments and embedded in realistic marketing strategy plans the solutions can be tested for robustness and sensitivity. Despite effort in this area, this is not a solved problem, and it seems that since researchers now have the ability to go back and look at the interaction between all of the elements of the marketing mix simultaneously that this is an area ripe for research. Well done models, empirical, analytical, and behavioral, exist for almost all elements of the marketing mix, but it is rare to explore them simultaneously and in an integrated framework. In that sense, ABM can serve as a methodology that can bring these tools together and allow for the interactions between these elements to be explored. This allows ABM to be used as a touchstone for comparing and integrating various disparate models.

Conclusion and discussion

The goal of this chapter has been to highlight a few of the areas of research within marketing that are ripe for the application of ABM. This is not meant to be an exhaustive list of areas, but instead has highlighted a few areas that seem to be well suited for ABM. All of the above areas feature elements that ABM can model, but that would be difficult to model using many other methodologies. However, this is not meant to argue that ABM should replace other methodologies in these areas. Instead, ABM should be seen as a complementary tool that can help explore and understand phenomena that might be difficult using other methods. Moreover, ABM can serve as a platform for integrating multiple methodologies together, since many modeling methods can be embedded within ABM.

In fact, there is still extensive research and work to be done in understanding how to expand the ABM method to the best of its ability. This chapter has focused on how to apply ABM in various areas of marketing, but there is also work to be done with respect to developing new and better methodologies for the use of ABM. There has been some research both within and outside of marketing on combining methodologies (Trusov, Rand and Joshi 2013, Brown et al. 2004), but additional work needs to be done to create frameworks and methods for doing this scientifically for a wide spectrum of methodologies. Fortunately, the integrative and computational free-form nature of ABM means that there are many ways to do this, and the real research question is what is the best way to accomplish this task.

All in all, ABM provides a new paradigm and way of thinking about modeling that has the potential to illuminate new understandings and analysis in future marketing research. ABM is a powerful tool for analyzing complex systems of behavior since it enables the linkage between low-level individual behavior and high-level emergent patterns. This ability to formalize individual behavioral models provides a common language that enables cross-disciplinary conversations about concepts that are of interest not just to marketers, but also to geographers, social scientists, economists, and many other fields of study. As a result, ABM is a tool that could provide important insights into some of the most important problems facing marketing scientists in the near future and beyond.

Further reading

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21

Genetic, memetic and electromagnetism-like algorithms

Applications in marketing

Pedro Godinho and Manuela Silva

Abstract

Marketing models and problems are becoming increasingly complex, requiring the use of sophisticated solution procedures. This is leading to an increasing utilization of meta-heuristics. In this article, we present three population-based meta-heuristics: genetic, memetic and electromagnetism-like algorithms. We present the main characteristics of these techniques, as well as some applications in management in general, and marketing in particular. The article shows that the use of these meta-heuristics is on different phases of maturity: genetic algorithms have a wide range of applications in the marketing field; memetic algorithms have many applications in different fields of management, but not so in marketing; electromagnetism-like algorithms are now starting to be applied in a wide variety of fields. We present an application example of an electromagnetism-like algorithm to a marketing problem, and we discuss some paths of future research concerning the application of these meta-heuristics to marketing problems.

Key words

Meta-heuristics, genetic algorithms, memetic algorithms, electromagnetism-like algorithms, population-based heuristics, evolutionary algorithms, mathematical models in marketing, optimization problems.

Introduction

Managing large amounts of information and efficiently using this information in order to improve decision making has become more and more challenging. Intelligent solutions based on evolutionary algorithms for complex problems in different fields are becoming increasingly widespread nowadays. This chapter attempts to provide an overview for the marketing researcher of the genetic, memetic and electromagnetism-like algorithms, and to present and highlight the broad range of marketing fields to which these technologies are suitable, avoiding an in-depth analysis of all applications – with varying success – recorded in the literature.

Genetic, memetic and electromagnetism-like algorithms are population-based meta-heuristics that allow the user to reach good solutions to complex problems. These meta-heuristics have specific characteristics that differentiate them from traditional optimization techniques: their search space is defined by strings that represent the problem being optimized rather than the actual parameters; they search from a population of points as opposed to a single point; they only require a fitness function and no other auxiliary information, such as derivatives or assumptions regarding the continuity of the objective function and, unlike many conventional optimization methods, they use probabilistic transition rules to guide their search, instead of deterministic rules. These differences contribute to enhance these algorithms' robustness, since they avoid the possibility of getting stuck in local optima, and allow them to outperform other commonly used methods.

These meta-heuristics work in the following way: they generate an initial set of solutions (population) to the problem being considered, and iteratively try to reach better solutions by making the previous solutions interact in pre-defined ways, improving some of them with specific search methods or introducing new solutions in the population. The quality of a solution is measured by a fitness value that can be seen as an objective function to be maximized or minimized.

This chapter attempts to show that genetic, memetic and electromagnetism-like algorithms offer real practical benefits in many applications of the marketing field. We will show that they have already been applied to several areas, such as managing the marketing mix, segmentation, targeting and positioning, consumer behavior, strategic marketing and site location. Moreover, they can also be applied to several other areas, such as allocation of sales force, allocation of sales territories, allocation of advertising and promotion budgets, selection of marketing channels, pricing optimization, media planning, physical distribution, optimization of social media strategies, planning of innovation networks, analysis of word of mouth communication and message propagation rates.

The structure of this chapter is as follows: in the second section the main characteristics of genetic algorithms are presented, as well as some of their applications in the marketing field. The third section introduces a brief description of the memetic algorithms and some of their applications are pointed out. Following this, electromagnetism-like algorithms are introduced and we show how they can be applied to a particular problem in marketing field. Some concluding remarks are followed by the outline of an agenda for future research.

Genetic algorithms

Main principles of genetic algorithms

Traditional optimization methods have been widely applied in marketing management, such as linear programming, integer and mixed integer programming, just to name a few. However, they are not always successful. Therefore, new optimization procedures and meta-heuristics, including evolutionary algorithms, simulated annealing (SA) and tabu search (TS), have been increasingly studied.

The term evolutionary algorithm is employed to refer to any probabilistic algorithm whose design is inspired by evolutionary mechanisms found in biological species. Among the variants of the evolutionary algorithms, such as evolution strategies (ES), evolutionary programming (EP) and genetic programming (GP), the most widely known technique is the genetic algorithm (GA).

GA, SA and TS have been found to be very effective and robust in solving numerous problems from a wide range of application domains. Besides, they are still suitable for ill-posed problems where some of the parameters are not known previously (Youssef *et al.*, 2001). These optimization

procedures have several similarities, namely, they do not guarantee finding an optimal solution, they are "blind" in that they do not know when an optimal solution was reached and so they must be told when to stop and they occasionally accept uphill (bad) moves. Importantly, they can easily be applied to any combinatorial optimization problem – all that is necessary is to have a suitable solution representation, a fitness function to measure the suitability of a solution and a mechanism to go through the search space and finally, under certain conditions, they asymptotically converge to an optimal solution.

GAs were invented by John Holland in the 1960s and were developed by himself and his colleagues and students at the University of Michigan in the 1960s and 1970s (see, e.g., Holland, 1975). In contrast to evolution strategies and evolutionary programming, Holland´s original aim was not to design algorithms to solve specific problems, but rather to formally study the phenomenon of adaptation as it occurs in nature and to develop ways in which the mechanisms of natural adaptation might be imported into computer systems (Mitchell, 1998).

GAs provide a population-based stochastic search procedure based on principles of natural genetics and survival of the fittest. They operate through a simulated evolution process on a population of string structures, named chromosomes, which correspond to candidate solutions on the search space. So, the first step in using them is to represent the possible solutions of the problem we are solving by a string of genes which can assume some values from a specified finite range or alphabet. This string of genes is a codification of the problem solution. This codification is problem-dependent and must be made according to the specific application of the GA. Generally, the alphabet used for codification is the binary code, although, depending on the problem, integer or real values can be employed.

When starting the utilization of a GA, an initial population of chromosomes is randomly or heuristically generated, and this population will then evolve across several generations. At each generation, the performance of each chromosome is evaluated by computing its fitness value. The better its fitness value, the higher is its probability of belonging to the next generation. Then the chromosomes that present better suitability to the environment and consequently have a greater probability of passing on their improved qualities to future generations are selected for reproduction, i.e., to produce offspring that inherit the best characteristics from both parents. After a number of generations established by the user, we expect the final result to be a population substantially better than the initial.

The theoretical basis for the GA is the Schemata Theorem (Goldberg, 1989), which states that the number of individual chromosomes with good, short, low-order schemata or building-blocks receive an exponentially increasing number of trials in successive generations. Based on the representation of a problem as a coded binary string, it affirms that short binary representations are rewarded whereas long binary ones are not.

Usually, the structure of a GA comprises the following principal components (Hurley *et al.*, 1995):

- Chromosomal representation – Each chromosome is a potential solution for the problem and consists in a string of genes. The binary system, as well as integers or real numbers, can be used to represent them.
- Initial population – After deciding the chromosomes' representation, it is necessary to create an initial population which will serve as the starting base for the GA. This population can be created randomly, or using specialized information on the specific problem. Empirical studies recommend an initial population size of between 30 and 100 individuals. Observe that with a large population size, the GA searches the solution space more thoroughly, thereby reducing the chance that the algorithm will return a local optimum that is not a

global optimum. However, in this case, the algorithm runs more slowly and long periods of computation take place.

- Fitness evaluation – This procedure involves the definition of a fitness or objective function which measures the suitability of each chromosome in the population. The chromosomes are de-codified and evaluated according to predetermined criteria, represented by the fitness function. A better value of the fitness function signifies that the chromosome represents a better solution for the problem being considered.
- Selection – A major element of a GA is the scheme employed to move from one generation to the next. This selection is a random procedure with priority being given to individuals that are most fit. So the principal objective of this operator is to emphasize good solutions and eliminate bad solutions from the population for the next generation. There are many feasible variations regarding how potential parents are chosen and how they come together to generate new offspring, such as, roulette wheel selection, tournament selection, ranking selection, uniform selection, stochastic uniform selection. The most common method used is the first one (Goldberg, 1989). In roulette wheel selection, each string in the population has a roulette wheel slot sized in proportion to its fitness. The chromosomes are selected with a probability that is proportional to their relative fitness. So the probable number of choices of a chromosome as a parent is approximately proportional to its relative performance in the population.
- Crossover and mutation – The crossover is the genetic operator responsible for interchanging some of the parts of the two selected individuals, the parents, in the reproduction. Crossover implements a mating scheme between pairs of parents to create two new individuals called progeny which carry out the characteristics of both parents. Due to its importance, several crossover techniques were developed. For a binary codification, one point-crossover, multi-point crossover and uniform crossover are typically used (Srinivas and Patnaik, 1994). Concerning the first method, this operator randomly chooses a locus and exchanges the subsequences before and after that locus between two parent chromosomes to create two descendants. For example, if we have

  Parent 1 1 0 0 0 1 0 0 and *Parent 2* 1 1 1 1 1 1 1,

choosing the third locus to cross, the following offspring would be created

Child 1 1 0 0 1 1 1 1 and *Child 2* 1 1 1 0 1 0 0.

On the other hand, for real string representation we can also point out arithmetic crossover, exchange crossover and heuristic crossover (Michalewicz, 1994). The crossover operation is effectuated with an associated probability known as crossover rate. Empirical studies point out that better results are reached through crossover probabilities between 65% and 85%. Observe that a high crossover probability value implies a high probability of new chromosomes being introduced more quickly, but this can originate an undesirable situation: a great part of the population will be substituted and the individual with the best fitness can disappear from the population. If we only make use of the crossover operator in order to produce offspring, a possible problem that may emerge is connected with the fact that if all the chromosomes in the initial population have the same value at a certain position, then all the future offspring will have this same value at this position. To overcome this problem the mutation operator is used to introduce and to guarantee the genetic diversity of the population, changing randomly the values of one or more genes. This operator prevents the premature convergence of the method

towards a local optimum, considering new points in the search area. In a binary codification, each bit in each chromosome is checked for a possible mutation by generating a random number between zero and one, according to a uniform probability distribution; if this number is smaller or equal to the given mutation probability, then the bit value is changed, e.g. 0 becomes 1 and vice versa. For a real codification other mutation processes can be implemented such as Gaussian mutation, uniform mutation, non-uniform mutation and creep mutation (Michalewicz, 1994). Since these alterations arise infrequently, the rate mutation value is usually small; more concretely, it is usually of the order of about 0.1%.

The GA starts by generating and evaluating the initial population. Selection, crossover and mutation are then performed, resulting in a new population. The suitability of each chromosome in the new population is evaluated and the entire cycle – selection, crossover and mutation – repeated. Due to the fact that the GAs are iterative stochastic procedures, whose convergence is not guaranteed, a condition for stopping the cycle is required. The stopping criteria used in GAs vary according to whether or not information is known about the optimal value, e.g., the optimum or an upper (lower) bound. In the affirmative case, the algorithm can be terminated if the percentage deviation of the best solution found so far from the optimal solution is acceptable. When information concerning the optimal solution is not known, then termination of the algorithm could happen in several ways: if the best solution found so far is known to be acceptable to the user; if the running time of the algorithm goes over some particular limit established by the user; if no improvements are perceived in the fitness function for a specified number of generations or if the algorithm has converged. More refined schemes could also consider the population diversity. Figure 21.1 illustrates the structure of a simple GA.

An important detail that must be analyzed is how to avoid good solutions disappearing from the population during successive crossover and mutation operations. One way to attain this goal is by an elitist selection strategy, where a certain fraction of the best performing individuals is kept intact into the next generation. A good performance of a GA may also take into consideration some specific knowledge about the genetic operators, since they have a great influence in the convergence process. The definition of these details is a function of the nature and complexity of the optimization problem. In agreement with Goldberg (1989), the performance of the referred algorithm is increased by combining a high crossover rate with a low mutation probability and a moderate population size.

GAs lend themselves very well to the optimization of functions of discrete variables, continuous variables or both types of variables, showing a good performance with limited complexity of calculations. This makes them very useful to tackle problems both in the marketing field and in other fields of research.

Applications of genetic algorithms in marketing field

Genetic algorithms have been the focus of studies in many areas of marketing such as managing the marketing mix, segmentation, targeting and positioning, consumer behavior and strategic marketing. Indeed, several works can be found in the marketing literature emphasizing their performance.

The first example of a GA application that we consider deals with optimization of product-market structure. Studying competitive structure plays a central role in the environmental analysis carried out by companies, and a wide variety of procedures have been presented. Regardless of the method employed, an improved understanding of one's competitor as well as the impacts of their actions can increase strategy effectiveness and consequently economic performance. Traditional methods of assessing competitive structure from aggregate sales data

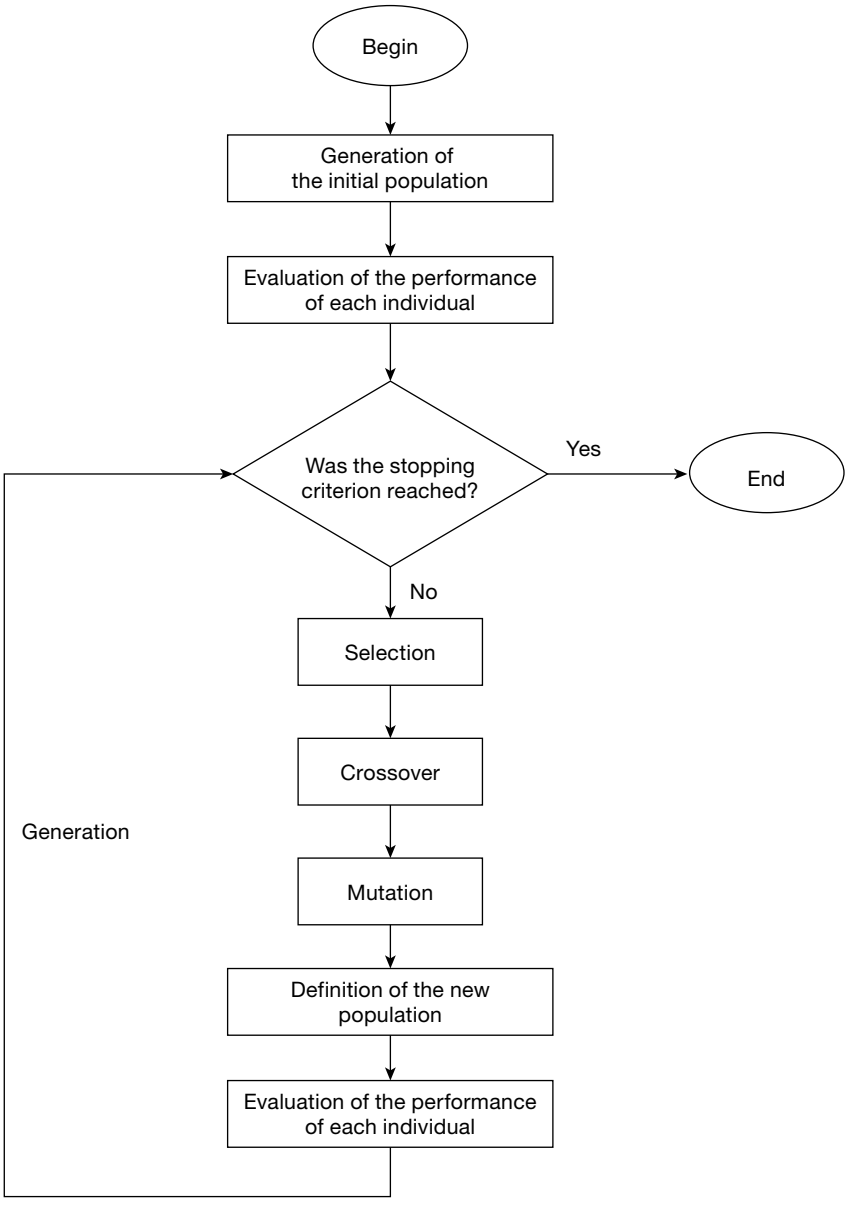

Figure 21.1 Structure of a simple genetic algorithm

yield only limited insights into the timing of the marketing-mix activity. Klemz (1999) proposes a technique of assessing market structure by using the timing of competitive mix activity. More concretely, through GAs, the author estimates marketing-mix timing rules for a consumer product market and also shows how they can be used to complement econometric analysis, to provide a fuller knowledge of competitive activity in order to aid in the decision making process of the brand manager.

In today's competitive market, industrial designers, combining several concepts such as design, computer technology, aesthetics and economics, aim to improve the quality of life by designing

products that meet consumer needs. As new products are continuously being released, manufacturers must continually design products that satisfy customer requirements, in order to avoid displacement by market competitors. On the other hand, managers, when planning strategies for marketing products to different users and consumers, must also take into account various combinations of product shapes, in order to satisfy the consumers' tastes and minimize the risk of their products being rejected by the market. Hsiao *et al.* (2010) analyze product styles by using a GA, and they propose a support model that closely conforms to the psychological preferences of consumers.

With the fast development of technology, electronic products have become an important power in economic growth and LCD TV has enjoyed a particularly fast growth speed. That being so, all manufacturers attempt to meet the consumer demand, and they must pay attention to the product design, performance and cost. International LCD TV manufacturers must fix an appropriate win-win price and a productive capacity for themselves as well as for the Original Equipment Manufacturer (OEM), so that both can create a long-lasting relationship and maximize their profits. Che (2009), in his research, aims to discuss how the international manufacturers could find out a balanced and win-win policy with the OEM based on the order price and quantity. The author develops a win-win pricing strategy based on the product lifecycle of the manufacturer and on the production function of the OEM. He builds a model based on GAs and uses a Visual Basic program to construct an information system that helps companies to plan for reserving productive capacity and for pricing strategy.

The use of GAs is not limited to the marketing area designated by managing the marketing mix, in which the above-mentioned studies can be included. There exist additional marketing problems in whose resolution GAs can be applied. In an attempt to solve an economic production lot-size model, Bhunia *et al.* (2009) applied a GA with tournament selection. The classical economic production lot-size (EPL) model assumes a constant production rate that is predetermined and inflexible as well as a constant unit production cost, and these two values are assumed to be independent of one another. However, machine production rates can easily be changed (Schweitzer and Seidmann, 1991). In other words the production rate can be treated as a decision variable. Increasing the machine production rate also increases the probability of component failure and therefore accelerates the deterioration of the quality of the production process. The above observations suggest extending the EPL model to situations where the production rate is a decision variable. Unit production cost then becomes a function of the production rate. In addition, quality of the production process deteriorates with increased lot size and increased production rate. Bhunia *et al.* developed an EPL model for single deteriorating items using several assumptions, e.g.: the demand rate is a deterministic function of selling price and marketing cost; production rate is a decision variable; partial backlogging shortages are allowed. The backlogging rate is dependent on the length of the waiting time up to the start of the next production. Afterwards, the model was formulated as a constrained optimization problem and then was solved by a GA.

Many behavioral theories, like theories about human needs, motivational processes, social comparison theory, social learning theory, theory of reasoned action, all clarify parts of the process that determines consumer behavior, one of the areas of marketing. Jager (2000) indicated that consumer behavior can be conceived of as a cyclical process, in which the micro-level behavior of many individuals and the macro-level outcome mutually affect each other. The driving forces at the collective and the individual level determine the environmental setting for consumer behavior. Besides, consumers may be more or less doubtful depending on the difference between expected and actual results of their behavior. GAs have also been used in problems related to consumer behavior, and we will now present some of these applications.

A case-based reasoning (CBR) system is an effective tool for improving the efficiency of complex and unstructured decision making. The following principles underlie this approach: retrieving past cases that resemble the present problem; adapting past solutions to the current situation; applying these adapted solutions and evaluating the results; and, last, updating the case base. In other words, CBR makes inferences employing analogy to obtain similar experiences for solving problems. Some CBR systems represent cases using characteristics and employ a similarity function to measure the similarities between new and past cases. Several approaches have been introduced to improve the case retrieval efficiency (Aha, 1992; Jeng and Liang, 1995). Nevertheless, most of these works focused on the similarity function aspect rather than synergizing the matching results from individual case features. Fundamentally, when developing a CBR system, determining useful case features that are able to distinguish one case from others is a problem that must be addressed at the outset. Besides, the weighting values used to obtain the importance of each selected feature must be assigned before proceeding with the case matching process. In order to provide an alternative solution, Chiu (2002) presents a GA-based approach to automatically construct the weights by learning from the historical data. In his research, the author developed a prototype CBR system to predict which customers are most likely to buy life insurance products. The results demonstrate that GA-based design of CBR systems produces more accurate and consistent decisions than regression-based CBR systems.

Unlike some decades ago, when firms were principally concerned about having enough information to guide their decision processes, the main problem recently confronted by organizations has been to acquire high quality information about their business framework in order to make the right decisions. This idea has driven the evolution of the management information systems (MIS), from those based on the data to the posterior knowledge-based systems whose greatest exponents were the expert systems. The problem of improving the quality of systems used to deal with the diversity of information possessed by companies becomes still more significant when it is analyzed within the structure of the marketing function – the business domain mostly responsible for managing relations with consumers, which is one of the main objectives of market-oriented firms. So, the application of appropriate marketing management support systems (MkMSS) to the analysis of data fulfills an important task. Consequently, it is perfectly natural to remark the increase in the use of knowledge-based MkMSS. Although the marketing expert systems were, in line with the MIS framework, the first knowledge-based systems applied to supporting the marketing managers' decision process, there has been significant progress, such as those systems based on artificial neural networks, case-based reasoning, fuzzy systems or clustering. In any case, all of the marketing knowledge-based systems have one characteristic in common: they employ methodologies for knowledge discovery in databases. Casillas and Martínez-Lopez (2009) focus their research on predictive induction for extracting useful knowledge in order to help marketing managers to better predict consumer behavior. This extraction is carried out by genetic fuzzy systems: GAs used to learn fuzzy rules.

One factor behind the success of any organization in a competitive environment is to be able to find differences in the needs of customers. Market segmentation is the suitable response in reaching this objective. The most essential factor in segmentation consists in identifying and defining the variables and segmentation criteria in a correct manner. The variables of market segmentation refer to a set of fundamentals or specifications which is used to divide the customers into convergence groups. Note that irrelevant variables can distort the structure of segmentation and do not provide exact information regarding the optimal parts of the market and the specifications of each part, so the performance of the results of segmentation is dependent on the selection of suitable variables. In the process of segmentation, the potential customers for the

products or services are grouped into clusters with similar demands. The responsibility of the organization is to identify these groups in order to plan an appropriate marketing program. Many researchers used GAs for the segmentation of different markets, for example, the tourism market, industrial markets, the online market, etc. The study carried out by Shahroudi *et al.* (2011) focuses on the segmentation of bank customers. More concretely, in order to specify the right variables and remove the irrelevant ones, as well as to identify the number of simultaneous branches, they propose a GA combined with the K-means clustering algorithm. The information originating from segmentation will help the marketers interact effectively with the customers through a fundamental marketing mix and lead the bank towards allocating its resources more efficiently.

In addition to the areas of marketing in which the studies referred to above were included, GAs have also been used efficiently in strategic marketing, particularly in marketing effectiveness measurement. Midgley *et al.* (1997) and Shiraz *et al.* (1998) demonstrated how GAs can be applied to develop strategies in oligopolistic markets characterized by asymmetric competition. The authors try to explain and to improve upon the historical behavior and profits of a group of brand managers, a market model to predict the weekly profits of each brand, given the marketing actions of all managers. So, each brand's strategy evolves through repeated interactions in a virtual market, employing the estimated weekly profits as measures of its fitness for the GA. The results obtained in their research allowed the authors to show that is possible and suitable to use multi-population GAs in modeling co-evolving asymmetric artificial agents, and also demonstrated the potential of these algorithms to be applied in exploring the patterns and strategies of asymmetrical competitors in a mature oligopoly.

Memetic algorithms

Basic concepts of memetic algorithms

It was in late 1980s that the term Memetic Algorithms (MAs) was given birth to designate a family of meta-heuristics that tried to blend several concepts from different families such as evolutionary algorithms and simulated annealing. While genetic algorithms have been inspired by trying to emulate biological evolution, MAs try to mimic cultural evolution. More concretely, they are intrinsically concerned with exploiting all available knowledge about the problem under study. The incorporation of problem domain knowledge is not an optional mechanism, but a crucial feature that characterizes MAs. Taking into account different contexts and situations, MAs are also known by hybrid evolutionary algorithms, Lamarckian evolutionary algorithms or Baldwinian evolutionary algorithms.

GAs may be considered as a marriage between population-based global search and local improvement procedures, and have received increasing attention in the recent years. They apply a separate local search process to refine individuals, that is, they improve their fitness by hill-climbing. These methods are inspired by models of adaptation in natural systems that combine evolutionary adaptation of populations of individuals with individual learning within a lifetime. They are inspired by neo-Darwinian principles of natural evolution and Richard Dawkins' concept of a meme defined as a unit of cultural evolution that is capable of local refinements. In the words of Dawkins (1976):

> Examples of memes are tunes, ideas, catch-phrases, clothes, fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation.

This characterization of a meme illustrates the central philosophy of MAs: individual improvement plus populational cooperation. In other words, in the cultural evolution process information is not simply transmitted unchanged between individuals; on the contrary, it is processed and enhanced by the communicating parts. This enhancement is achieved in MAs by incorporating heuristics, approximation algorithms, local search techniques, specialized recombination operators, truncated exact methods, etc. Basically, most MAs can be interpreted as a search strategy in which a population of optimizing agents cooperate and compete with each other (Norman and Moscato, 1991). The success of MAs can probably be explained as being a direct consequence of the synergy of the different search approaches they incorporate. The most fundamental and distinctive feature of MAs, the inclusion of problem domain knowledge referred above, is supported by theoretical results. As Hart and Belew (1991) initially stated and later Wolpert and Macready (1997) formulated in the so-called No-Free-Lunch Theorem, a search algorithm strictly performs in accordance with the amount and quality of the problem knowledge it incorporates (Moscato and Cotta, 2003). This fact clearly supports the exploitation of problem knowledge inherent to MAs. The influence of the memes employed has been proven by several authors (e.g., Hart, 1994; Ishibuchi *et al.*, 2003; Ong and Keane, 2004) to have a major impact on the search performance of MAs. These works revealed that the search performance attained by MAs is often better than that attained by GAs alone, especially when prior knowledge on suitable problem-specific memes is available.

From an optimization point view, MAs are hybrid EAs that combine global and local search, using EAs to perform exploration – a strategy employed by many successful global optimization approaches – while the local search method performs exploitation. MAs have, indeed, been recognized as a powerful algorithmic paradigm for evolutionary computing. They have proved to be successful in solving optimization problems in many contexts (Torn and Zilinskas, 1989; Hart, 1994; Cowling *et al.*, 2000; Ishibuchi *et al.*, 2003). Since optimization problems constitute one of the most typical fields in which this technique is actively used, an explanation of the use of an MA in such a problem will now be given.

Given a representation of an optimization problem, a certain number of individuals or agents, which represent potential solutions for the problem under consideration, are created. The state of these agents can be randomly chosen in agreement with a certain initialization process. A heuristic can be selected to initialize the population. Thereafter, each individual makes a local search. The mechanism to do a local search can be to attain a local optima or to improve the corresponding solution up to a predetermined level. Next, when the individual has reached a certain development, it interacts with the other members of the population. This interaction can be competitive or cooperative. The competition can be similar to the one depicted in the selection process of GAs. The cooperative behavior can be understood as a mechanism of crossover in GA or other kinds of breeding leading to the creation of a new individual. Broadly, we must consider cooperation as an interchange of information. The local search and cooperation – mating, interchange of information – or competition – selection of better agents – are repeated until a stopping criterion is satisfied.

In light of the above considerations, the structure of an MA is depicted in Figure 21.2.

In addition to the principal characteristic that distinguishes MAs from GAs, reported at the beginning of this section, it is important to mention that their conceptual difference is such that GAs do not allow individuals to choose, modify and improve their own genes in their natural process, whereas MAs allow individuals to intentionally acquire, modify and improve their memes. That means that, although GAs are capable of discovering good regions in the search space, their exploitation requires a level of attention for which GAs are not designed. Instead, MAs have the local search method employed every time some new solutions are produced and thus are able to identify local optimal solutions.

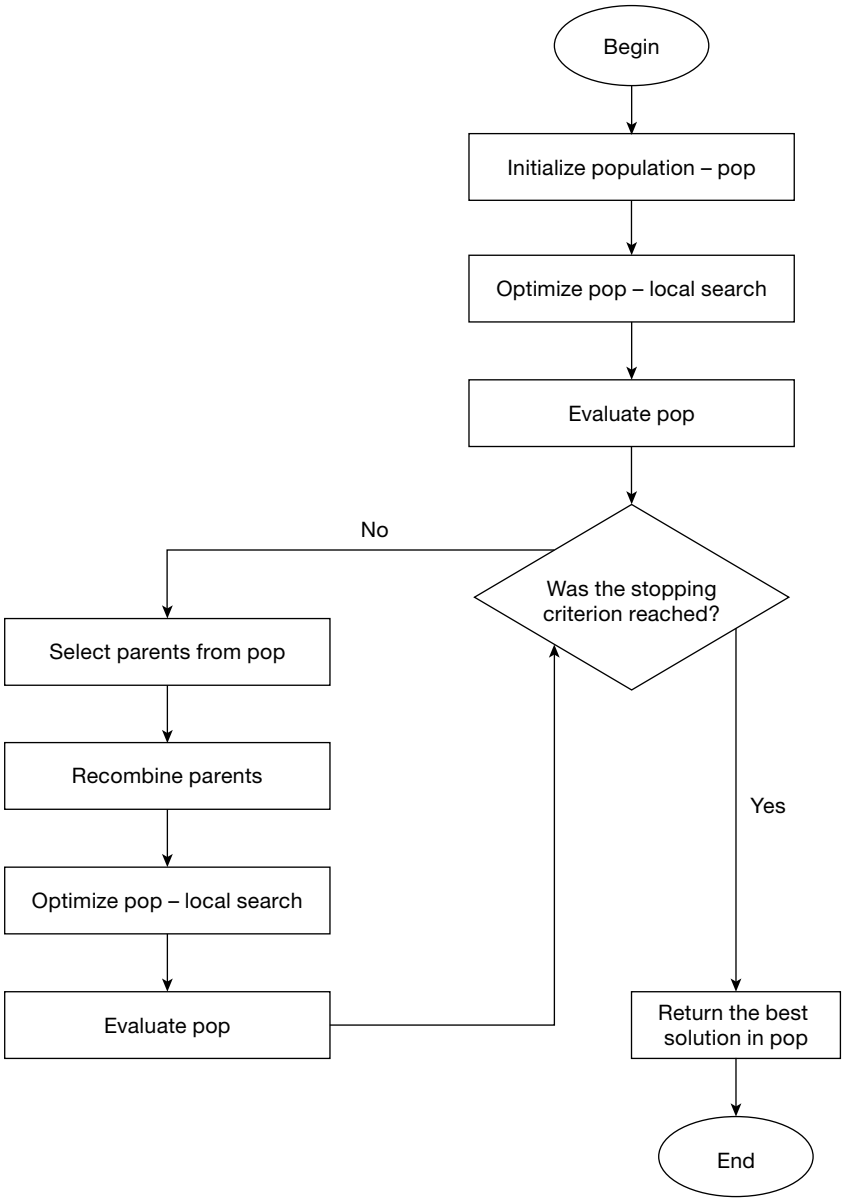

Figure 21.2 Structure of a memetic algorithm

Applications of memetic algorithms

The literature corroborates that memetic algorithms have been successfully applied to a wide range of complex problems. In fact, the steady increase in the number of research articles reporting the use of this heuristic is notable – new applications are being developed continuously. That being so, a succinct overview of MAs' applications is provided in this section. MAs have revealed a great performance in solving combinatorial optimization problems, particularly

NP-hard optimization problems. Examples of problems to which MAs have been successfully applied are: machine scheduling (Miller *et al.*, 1999); the multidimensional knapsack problem (Gottlieb, 2000); the travelling salesman problem (Freisleben and Merz, 1996; Gorges-Schleuter, 1997); task allocation (Hadj-Alouane *et al.*, 1999); timetabling (Burke *et al.*, 1998); project scheduling (Ramat *et al.*, 1997; Shirazi and Nejad, 2009); open shop scheduling (Fang and Xi, 1997; Liaw, 2000); and warehouse scheduling (Watson *et al.*, 1999). We emphasize that the goal of this list is only to illustrate some of the fields comprising the wide range of MA applications. Indeed, there are many other applications. It is now worthwhile to refer two others MA applications related to the management field: production planning and resource allocation problems.

In the area of production planning, the multilevel lot-sizing (MLLS) problem in material requirement planning (MRP) systems is a problem so frequent that several approaches have been proposed in the literature. However, the major drawback of many approaches is their inability to provide cost-efficient solutions in a reasonable computation time for realistic size problems comprising universal product structures. The increase in customer needs implies larger and more complex product structures in manufacturing production systems. This market characteristic undoubtedly enlarges the importance of the uncapacitated multilevel lot-sizing problem in MRP production planning process. Computational requirements of optimizing routines for reasonable size problems have excluded their employment in most MRP settings. So, the first solution approaches for the MLLS problem were based on simple heuristics, some of them considering exclusively a single level lot-sizing model. However, the use of computationally simple procedures can yield significant cost penalties or decisions for which inventory and services levels are inappropriate. Later, the multilevel nature of the problem was considered in many heuristic methods. Dellaert and Jeunet (2000) implemented an MA to solve the uncapacitated multilevel lot-sizing problem with a time-invariant cost structure and no restrictive hypothesis on the product structure. To increase the search efficiency, they designed specific genetic operators that limit the search to the set of feasible solutions and, in addition, they decreased the size of the set of possible solutions by removing orders from periods in which there is no demand. The resulting meta-heuristic provides, in a moderate execution time, highly cost-effective solutions when compared with other techniques.

Resource allocation is the distribution of resources – usually financial – among competing groups of people or programs. As an example, we can point out the multi-objective resource allocation among competing projects (MORAP). When an organization is involved in various projects competing for the same monetary resources, it has to assess alternative ways of distributing such resources through different projects. In fact, every organization is confronted with various monetary allocation decisions permeating several levels of management. That being so, executives are faced with typical challenges such as: How should a limited amount of resources get distributed between a large number of possible projects? How should benefits be determined by multiple and frequently conflicting goals? Most studies have focused on scheduling rather than on the resource allocation optimization and furthermore, in most cases, single-objective problems are considered. Meanwhile, most real-world optimization problems are multi-objective in nature. Chen and Chyu (2010), motivated by one of the real scenarios in which the financial support of any specific project is connected to the organizational capital, analyzed monetary resource allocation among competing projects. They formulated a multi-objective optimization model, i.e., maximizing the overall return while simultaneously minimizing the total cost. In this model, the calculation of the Pareto optimal set can be computationally expensive. In order to avoid this drawback, the authors use an MA to approximate the Pareto frontier.

The electromagnetism-like algorithm

Introduction to the electromagnetism-like algorithm

Similarly to genetic and memetic algorithms, the electromagnetism-like algorithm (EA) is a population-based heuristic aimed at solving global optimization problems. This algorithm was originally proposed by Birbil and Fang (2003), and some refinements to the original heuristic have been proposed since then (e.g., Birbil *et al.*, 2004; Rocha and Fernandes, 2007). In this subsection, we provide a global description of the workings of this algorithm, partly following Godinho and Branco (2012).

The EA applies to the minimization of a function $g(x)$, with x belonging to a continuous, bounded subset S of $\mathbb{R}^n$, being the dimension of the problem[1]:

$$x \in S = \left\{ \left(x_1, \ldots, x_n \right) \in \mathbb{R}^n \mid -\infty < l_k \leq x_k \leq u_k < +\infty, k = 1, \ldots, n \right\} \tag{21.1}$$

where l_k and u_k are the lower and upper bounds for the k^{th} dimension of x, respectively.

This algorithm looks at the solutions $x \in S$ as charged particles interacting in the space, each particle being a point in the space. The number of particles to be considered is pre-specified, and will be denoted by m. In the beginning of the procedure each of these particles is generated as a random element of S. The charge of each particle x is determined by the value of the objective function $g(x)$, and the interactions among particles lead to a resulting force that determines the movement of the particles across S.

If, at any stage of the heuristic, we have the particles $x^1, \ldots, x^m$, with x^{best} being the value of x^i that leads to the smallest value of the function $g(x)$, then the charge of each particle x^i is defined by:

$$q^i = \exp\left[-n \cdot \frac{g\left(x^i\right) - g\left(x^{best}\right)}{\sum_{k=1}^{m} \left[g\left(x^k\right) - g\left(x^{best}\right) \right]} \right], i = 1, 2, \ldots, m \tag{21.2}$$

This charge determines the magnitude of attraction or repulsion for the corresponding particle. It leads to a force F_j^i exerted by a particle x^j on another particle x^i. The direction of this force depends on which particle has a smaller value of the objective function $g(x)$: the particle with a smaller value of the objective function will attract the other one and will be repelled by it. The computation of the force F_j^i is given by

$$F_j^i = \begin{cases} \left(x^j - x^i \right) \dfrac{q^i q^j}{\left\| x^j - x^i \right\|^2}, & \text{if } g\left(x^j\right) < g\left(x^i\right) \\ \left(x^i - x^j \right) \dfrac{q^i q^j}{\left\| x^j - x^i \right\|^2}, & \text{if } g\left(x^j\right) \geq g\left(x^i\right) \end{cases}, i = 1, 2, \ldots, m \tag{21.3}$$

The total force exerted on any particle x^i is calculated as

$$F^i = \sum_{\substack{j=1 \\ j \neq i}}^{m} F^i_j, i = 1, 2, \ldots, m \tag{21.4}$$

After calculating the total force exerted on any particle x^i, the particle is moved in the direction of the force by a random step. For each particle, the step length is calculated by resorting to a randomly generated value λ, assumed to be uniformly distributed between 0 and 1, and takes into account both the normalized total force vector and the distance between the particle and the boundary of *S*. Concretely, we calculate the next value of the k^{th} component of x^i as

$$x^i_k = \begin{cases} x^i_k + \lambda \dfrac{F^i_k}{\left\| F^i \right\|} \left(u_k - x^i_k \right), \text{ if } F^i_k > 0 \\ \\ x^i_k + \lambda \dfrac{F^i_k}{\left\| F^i \right\|} \left(x^i_k - l_k \right), \text{ if } F^i_k \leq 0 \end{cases}, \; k = 1, 2, \ldots, n \tag{21.5}$$

In order to avoid losing the best solution, the corresponding particle is never moved. The heuristic consists of repeating the calculation of forces and moving of particles until a pre-specified number of iterations (*MAXITER*) is reached.

In each iteration, Birbil and Fang (2003) also use a local search method. In the main description of the algorithm, this method is applied to all particles, but the authors also consider the possibility of applying it only to the best particle. The authors use a simple random line search algorithm applied coordinate by coordinate, based on two parameters: a parameter δ that determines the maximum step length used in the local search and a parameter *LSITER* that defines the maximum number of iterations performed for each coordinate.

The authors define the maximum feasible step length as $\delta \cdot (\max_k \{u_k - l_k\})$. For each dimension, they iteratively try to improve the objective function of the particle by considering changes in the position of the particle along that dimension. Those changes are based on two random numbers, one defining the sign of the change to be applied and the other defining the magnitude of the change as a percentage of the maximum step length: the first random number may be generated according to a Bernoulli distribution with a probability 50% for both values 0 and 1, and the second according to a uniform distribution with a minimum of 0 and a maximum of 1. After applying this randomly generated change, the new objective function value is computed and compared to the objective function value for the original particle location. If the new location of the particle improves its objective function value, then the new location is kept and the local search is concluded for the current dimension; otherwise the previous location is kept. The process is repeated until either an improvement in the objective function of the particle is achieved or the maximum number of local search iterations, *LSITER*, is reached for the current dimension.

The EAS may thus be described by the following algorithm:

Parameters: *m*, *MAXITER*, *LSITER*, δ

Generate *m* particles randomly from the feasible domain *S*.
iteration←1.
while *iteration* ≤ *MAXITER*
Apply the local search method, with *LSITER* iterations and maximum step length δ.

Calculate the forces exerted on all particles, according to (21.2), (21.3) and (21.4).
Move the particles according to (21.5).
iteration←*iteration*+1.
end while.

Some refinements to the original algorithm

Since the first proposal of the electromagnetism-like algorithm, several refinements have been suggested.

Some of these refinements concern the application of local search method. In the original paper, Birbil and Fang (2003) consider the application of the local search method both to all the particles in the population and to a single particle. Rocha and Fernandes (2007) notice that the application of the local search method to all the particles is costly in terms of function evaluations, and propose applying it only to the best particle in the population.

The fact that function evaluations are usually the costliest part of the algorithm leads Rocha and Fernandes (2007) to propose another modification to the algorithm. They suggest a population shrinking strategy that reduces the number of particles in the population whenever the concentration of particles around the best point reaches a pre-specified level, arguing that, when this is the case, it will be possible to discard some particles without affecting the convergence of the algorithm. Rocha and Fernandes use the spread of values of $g(x^i)$ with respect to the best value $g(x^{best})$ as a measure of the dispersion, proposing that that population should be shrunk whenever this spread is reduced by a predefined factor. The authors present some tests to this population shrinking strategy, showing an improvement in the algorithm performance.

There is no guarantee that the original EA will converge to the global optimum, even if the number of iterations grows to infinity. In order to overcome this problem, Birbil *et al.* (2004) propose a modification to the algorithm that guarantees convergence to the optimum with probability 1, for a broad class of problems. The modification performed by the authors consists of selecting, in each iteration, the particle that is furthest from the best solution, and allowing the forces exerted on that particle to be randomly perturbed and reversed.

Godinho and Branco (2012) combine some ideas of Birbil *et al.* (2004) and Rocha and Fernandes (2007) in a version of the heuristic that is guaranteed to converge to the optimum as the number of iterations grows to infinity. In that version of the heuristic, instead of shrinking the population, the authors propose replacing a fraction of the particles by randomly generated new particles. The replacement takes place either when the spread is reduced enough or when a predefined number of iterations is executed without the spread having been sufficiently reduced. Compared with the population shrinking strategy of Rocha and Fernandes, this procedure intends to sacrifice the speed of convergence in order to guarantee that the entire space S is properly searched by the algorithm.

An application example

The EA is quite flexible, and several authors have achieved very promising results when applying procedures based on this heuristic to different problems, like project scheduling problems (e.g., Debels *et al.*, 2006; Godinho and Branco, 2012), machine scheduling (e.g., Chang *et al.*, 2009), routing problems (e.g., Yurtkuran and Emel, 2010), or knapsack problems (e.g., Bonyadi and Li, 2012), among others. However, we are not acquainted with any application of this algorithm to problems related to the marketing field. In spite of that,

this heuristic may be very useful in solving problems from the marketing field, and we will now present an example.

We will exemplify an application of the EA to a location problem. We consider a location model that can be defined as a continuous version of the Multiloc model (Achabal *et al.*, 1982) for locating multiple stores. The Multiloc model considers the location of a set of new stores in a market in which there is a set of customer originating areas and a set of existing stores. The model aims at finding the best design and the best location for each new store, assuming there is a discrete set of potential locations and a discrete set of possible designs for these stores. The model considers that the store location and its design lead to a set of attributes that define the store attractiveness to the customers. The objective of the model is to maximize the expected profit.

More concretely, assume that r new stores must be located in a market with p customer originating areas and s existing stores. The probability of a customer originating in area i shopping at store j is:

$$P_{ij} = \prod_{k=1}^{q} A_{ijk}^{\beta_k} \Big/ \sum_{j'=1}^{r+s} \prod_{k=1}^{q} A_{ij'k}^{\beta_k} \tag{21.6}$$

where indices $\mathbf{1}, \ldots, \boldsymbol{r}$ denote the new stores, indices $\boldsymbol{r}+\mathbf{1}, \ldots, \boldsymbol{r}+\boldsymbol{s}$ denote existing stores, q is the number of attributes, $\boldsymbol{A}_{ijk}$ is the k-th attribute describing how the store attracts customers from area i and β_k is the estimated parameter associated with the kth attribute.

The customers' expenditures are assumed to be independent from the network of stores. The objective function (expected profit) can then be defined as:

$$g(\boldsymbol{x}) = \sum_{i=1}^{p} \sum_{j=1}^{n} C_j E_i P_{ij} - \sum_{j=1}^{n} \sum_{l=1}^{L} F_{jl} x_{jl} \tag{21.7}$$

where n is the number of potential locations, $\boldsymbol{E}_i$ is the amount of expenditures by customers originating from area i, $\boldsymbol{C}_j$ is the profit margin in potential location j before fixed costs, L is the number of possible store designs and $\boldsymbol{F}_{jl}$ denotes the fixed costs of a store with design l located at potential site j. $\boldsymbol{x}_{jl}$ will be the decision variables, denoting whether or not a store with design l will be located at potential site j, and the calculation of $\boldsymbol{P}_{ij}$ will take these variables into account: $\boldsymbol{P}_{ij}$ will be zero if no store is opened at site j, and the values of the attributes take into account the design chosen for the store located at the site being considered. For more details, we refer the reader to Achabal *et al.* (1982).

Achabal *et al.* (1982) present an example of the model in which they consider two attributes: distance and sales area. In order to illustrate the application of the EA, we will use a continuous version of this problem, with the same two attributes. Specifically, we consider that, instead of choosing the locations from a set of potential sites, we may choose any locations in a rectangular area (similarly to what is done in center of gravity location models) and, instead of choosing the sales area from a predefined discrete set of values, we may choose any area from a continuous interval, defined by a minimum and a maximum sales area.

For each new store, we must choose three values: the abscissa and the ordinate of the point at which the store is located (this point can be seen as the center of the store) and the sales area. Since we want to locate r new stores, each solution will be a vector with $\mathbf{3} \cdot \boldsymbol{r}$ values. Since we are assuming that we may locate at each point inside a rectangular area and that the sales area has

a minimum and a maximum value, each of the components of the solution will have a lower and an upper bound and, therefore, the solution space has the form defined by (21.1).

Similarly to Achabal *et al.* (1982), we considered an 8 by 10 rectangular area, which simultaneously constitutes the place from which the customers originate and the area where the new and the existing stores are located. This rectangular area was divided into 80 customer originating areas, each one being a one by one square. The distance between a customer and a store was defined as the Euclidean distance between the center of the store and the center of the area from which the customer originates. In order to apply the EA, we defined some configurations, in terms of the number of new stores (r) and existing stores (s), and for each one we generated 20 problems. In each one of these problems, the location and size of existing stores and the expenditures of customers originating from each area were generated randomly. We considered that sales area was in the interval between 5 000 and 30 000 square feet, expenses from customers originating from each area were between 0 and 200 monetary units, the abscissa of the center of the stores was between 0 and 8 and its ordinate was between 0 and 10. All random variables were generated using uniform distributions. For the other parameters, we defined a profit margin of 1.5% before fixed costs, independent of the location of the store, and parameters β_1 and β_2 with the same values that were estimated in the example of Achabal *et al.*: $\beta_1 = \mathbf{2.0059}$, for the sales area attribute, and $\beta_2 = \mathbf{-0.3673}$, for the distance attribute. We assumed that the fixed costs were proportional to the sales area, with the proportionality constant defined in such a way that if all stores have a sales area of 17 500 square feet (the middle point of the sales area interval), fixed costs would represent 60% of the profit we would obtain by disregarding such costs.

We used a version of the EA similar to the one proposed by Godinho and Branco (2012). The number of iterations was defined according to the suggestion of Birbil and Fang (2003) of using 25 times the dimension of the problem. Since the dimension of the problem is $\mathbf{3} \cdot \boldsymbol{r}$, $\boldsymbol{r}$ being the number of new stores, we used $\mathbf{75} \cdot \boldsymbol{r}$ iterations. Following Godinho and Branco, we used populations of 20 particles, and replaced 50% of particles after 15 iterations, or after the spread of values was reduced to 25% or less of the initial value, whichever took place first. Differently from Godinho and Branco, and based on some preliminary experiments, we chose to use the local search procedure only on the best particle of the population. The local search procedure had 25 iterations, and we used a maximum step length that changed with the dimension that was being considered: 20% of the difference between the maximum and minimum values of the dimension being searched.

In order to benchmark the results obtained by the EA, we also solved each problem by using a traditional search method: the gradient ascent method with random restart. This method starts with a given solution, in our case a random solution, and successively tries to improve it along the direction defined by the gradient of the objective function. If the current solution is x^i and the gradient of the objective function is $\nabla \boldsymbol{g}(\boldsymbol{x}^i)$, we try to improve it by considering a new solution $\boldsymbol{x}^{i+1} = \boldsymbol{x}^i + \boldsymbol{\alpha} \cdot \nabla \boldsymbol{g}(\boldsymbol{x}^i)$, where $\boldsymbol{\alpha}$ is termed the step size. The step size may change at each iteration, and it is quite difficult to know in advance the most appropriate value for this parameter. We used a line search procedure for choosing the step size: we started by trying a step size $\boldsymbol{\alpha} = \mathbf{1}$ and we continually halved it until we were able to improve the value of the objective function. We considered that the method had converged when the step size became smaller or equal to 0.0001%. After the gradient descent converged we repeated its application, starting with a new random solution. In order to allow a fair comparison of the two methods, the application of gradient ascent, starting from new random solutions, was repeated for the same time it took the EA to reach a solution, and the best of all solutions was kept. Finally, we notice that we used a numerical approximation to the gradient of the objective function, computed by finite differences.

Following the idea used by Hurley *et al.* (1998), we also used a random search procedure to give a baseline for the EA and for the gradient ascent method. For each problem, we randomly generated 1 000 solutions and the best one was selected.

The algorithms were implemented in Visual C++, and some computational tests were performed using a 2 GHz PC with an Intel Core i7–2630QM CPU. We considered 7 different configurations, defined by the number of new stores (r) and by the number of existing stores (s). For each configuration, we randomly generated 20 problems. The results are summarized in Table 21.1.

In Table 21.1 we can see that both the EA and the gradient ascent method always lead to much better results than the random search procedure. In the very small problems with just two new stores and two existing stores, the EA does not perform better than the gradient ascent method (in fact, it seems to perform slightly worse). However, in all other cases it performs clearly better. The improvement in results seems to be more significant for more complex configurations: in fact, for the same number of existing stores, the improvement becomes more significant when the number of new stores increases; similarly, for the same number of new stores, the improvement becomes more significant when the number of existing stores increases.

We must also point out that the execution time of the EA grows more than linearly with the number of stores to be located. In fact this was to be expected: we defined a number of iterations that grows linearly with the number of new stores, and each iteration will take longer the larger the number of new stores we consider. So, the execution time grows more than linearly with the number of new stores to be located.

Summarizing, we conclude that the application of the EA shows improvements in the results over a simple gradient ascent method with random restart, for all but the very simple configurations. The improvements are larger for the more complex configurations that we consider.

Table 21.1 Results for the example (averages over the results obtained for 20 randomly generated problems)

r	*s*	*EA*	*GrA*	*RS*	*Time (sec.)*	*EA / RS*	*GrA / RS*	*EA / GrA*
2	2	41.24	41.35	39.05	1	8.48%	8.80%	-0.29%
4	4	34.65	33.73	29.86	10	17.73%	14.26%	3.03%
5	5	38.66	37.22	33.60	20	17.21%	12.17%	4.44%
10	10	36.50	31.90	28.34	150	30.29%	13.13%	15.11%
10	20	35.17	28.48	25.29	150	41.64%	13.31%	24.83%
20	10	45.97	38.16	35.02	1158	33.05%	9.29%	21.67%
20	20	37.67	29.00	26.39	1158	45.74%	10.51%	31.64%

Concluding remarks

In this chapter, we set out to draw the attention of researchers from the marketing field to the use of three meta-heuristics: genetic, memetic and electromagnetism-like algorithms. The chapter shows that the use of these meta-heuristics is on different phases of maturity: GAs have been around for quite a long time, and they already have a wide range of applications in the marketing field; although they are more recent, MAs already have many applications in different fields of management, but not so in marketing; EAs are the most recent of the three meta-heuristics, and are now starting to be applied in a wide variety of fields. Although we were

unable to find a significant number of applications of MAs and EAs to marketing problems, we believe that their characteristics lead them to be particularly useful to tackle some complex problems that arise in this field. In the case of EAs, we illustrated their potential usefulness with an original application to a location problem.

Marketing researchers wanting to start applying these meta-heuristics will find that software availability is quite different for the three of them. For GAs, there are lots of libraries for different programming languages and also packages for computation environments. Users of Matlab may resort to the Genetic Algorithm Solver that is included in the Global Optimization Toolbox, or they may use the free Genetic Algorithm Toolbox (available from the University of Sheffield at http://www.shef.ac.uk/acse/research/ecrg/getgat under the GNU General Public License). Users of R software environment have several packages for GAs, like *genalg*, *mcga* and *GA*, all of which are easy to use. We particularly recommend the *GA* package because it is quite flexible, allowing a good level of customization.

MAs should resort to problem-specific information in order to define an efficient local search procedure. This makes it more difficult to define general purpose libraries or packages for applying these algorithms and, therefore, there is much less software available. Users of R have a package, *Rmalschains*, which implements a general purpose MA, with generic local search procedures (that is, procedures that do not use problem-specific information). As for EAs, since they are more recent, it is also difficult to find general purpose software.

For researchers with programming skills, we note that these meta-heuristics are quite easy to implement in a programming language (e.g., Pascal, C, Python). Programming these algorithms has the additional advantage of allowing a complete customization to the needs of the problem being considered and it may therefore be a good alternative for using them.

An agenda for future research

Three main paths of future research can be identified for the application of genetic, memetic and electromagnetism-like algorithms to marketing problems: (1) finding the best way to apply these meta-heuristics; (2) comparing the performance of the meta-heuristics for some marketing problems; (3) tapping new problems for the application of these meta-heuristics.

Path (1) concerns finding out what are the best parameterizations and auxiliary procedures to apply each of these meta-heuristics to different classes of problems. In the case of GAs, this means finding out which set of parameters (population size, mutation rate, crossover rate, etc.) usually leads to a better algorithm performance, and also how the most adequate algorithm parameters are related to the problem being considered. In the case of MAs and EAs, this requires finding out not only the most adequate sets of parameters for different classes of problems, but also the local search strategies that work best. Extensive research in this area may provide future researchers with valuable information about the best ways to apply these meta-heuristics.

Path (2) concerns comparing the performance of different kinds of meta-heuristics in different classes of marketing problems – not only comparing the performance of GAs with that of MAs and EAs, but also considering other meta-heuristics, like tabu search, simulated annealing and ant colony optimization, for example. Let us now consider some existing problems for which it might make sense to try alternative procedures.

The first example is the media planning problem analyzed by Naik *et al.* (1998). The authors consider a situation in which advertisement effectiveness varies over time, and try to find out the advertising schedule that maximizes the total expected awareness along the planning period, according to a specific model. The schedule is defined as a bit-string of ones and zeros that

indicates whether advertising is on or off in each period. The authors present two case studies that apply the model to cereal and milk chocolate brand advertising, considering planning horizons of 75 weeks and 91 weeks, respectively. In both cases planning is made on a weekly basis. Since the number of potential schedules is very large, the authors use a GA to handle the model. Some characteristics of the model (repetition wearout if ad frequency is high, ad quality restoration during media hiatus) seem to point to promising local search strategies. Examples of such strategies are: interrupting long periods of continuous advertising by introducing some periods of no advertising; introducing advertising periods in long periods in which advertising is "off"; switching advertising to "off" at the beginning or the end of continuous advertising periods, and doing the opposite in periods of no advertising. It would be worthwhile to use an MA in this problem, incorporating these local search heuristics in the search procedure, in order to find the best schedules. If such an algorithm proved to be more efficient, it might allow applying the model to obtain more detailed schedules (e.g., planning on a daily basis instead of using a weekly basis).

Similar examples are the retail site location problem of Hurley *et al.* (1995) and the tourism site location problem of Hurley *et al.* (1998). In both cases the authors tackle the problem of choosing the best subset of a set of potential sites. The site selection strategy is defined as a bit-string of ones and zeros that indicates whether a potential site is used or not, respectively. A GA is used for both problems. However, it might also be worthwhile to explore some simple local search heuristics (e.g., for each unused site, analyze the impact of opening a retail shop/tourism facility). That might be done by using an MA instead of a GA.

Another case in which it might be worthwhile to explore a different meta-heuristic is the feature selection problem of Meiri and Zahavi (2006). The authors aim to find out the most influential subset of predictors for a marketing model, from a larger initial set of variables. The authors compare two different procedures: simulated annealing, a probabilistic meta-heuristic, and stepwise regression, a deterministic iterative improvement algorithms. In the applications considered by the authors, when real databases are used, there is no significant difference between the performances of both procedures. However, when the authors use a simulated dataset with complex relations between the variables, simulated annealing outperforms stepwise regression, which is not able to converge to the global optimum. These results show that simple iterative search procedures are able to produce good improvements, but it is necessary to use a probabilistic procedure in order to avoid being trapped in local optima. In such a case, an MA may be the most appropriate procedure, since it combines a probabilistic global search procedure with a local search algorithm. In this case, it may be worthwhile trying to use stepwise regression as the local search procedure in the MA, since it seems to be able to find local optima efficiently.

The third path of research, path (3), concerns tapping new problems for the application of these meta-heuristics. These new problems may either be defined by improved versions of existing models or by completely new models.

An example of a changed version of a model that may be better tackled by a different procedure was presented in the section on electromagnetism-like algorithm, where we have shown that EAs are suitable for a continuous version of the Multiloc model. As another example, we consider the model proposed by Klemz (1999), presented earlier. In this application, the author uses GAs to find marketing-mix timing rules that are able to explain changes in market share. The definition of these rules is based only on the sign of price changes. It is quite evident that both the sign and the magnitude of price changes may be relevant to explain changes in market share. So, it would be important to add the price change magnitude to the definition of the rules, and that might be achieved by adding a new element to each rule: the minimum price difference that is considered a "significant" price change. This element might be codified as a

bit-string, and a GA might be used, but that would most probably lead to a worse performance of the algorithm. Instead it might be better to codify it as a real value, and instead of a GA, use an MA or an EA. If an MA was used, the local search procedure might use a gradient descent-type method in order to optimize the minimum price difference. An EA would be naturally adapted to handle real values, and the binary elements of the rule might also be tackled (see, e.g., Godinho and Branco, 2012).

As an example of a new problem that may be handled by these kinds of meta-heuristics, we will now outline the general characteristics of a model in which the authors of this chapter will work in the future, along with Prof. Luiz Moutinho. The problem to be tackled is maximizing brand-engagement, defined as a function of several social media metrics related to social networks. First we estimate the function parameters and we consider a set of possible actions that could be undertaken by a firm. An action might be a TV advertising campaign, an Internet advertising campaign, sponsoring a sports team or a social event, etc., and it may be undertaken in different periods. Each action has a cost and it also has an impact on the social media metrics, and the problem we consider is to find which actions should be undertaken in each period, in order to maximize the brand-engagement function subject to a budget constraint. The brand-engagement function is not linear, and there may be some degree of interdependence between the impacts of the actions. So, getting the optimal solution to the problem is not trivial, and traditional procedures may get stuck in local optima. Using a binary codification of the strategies, the best strategy may be determined by resorting to a GA, or we may use an MA if we can define some efficient local search algorithm to improve the solution.

Note

1 In this presentation of the algorithm we will assume that we want to minimize a function g(x). If instead we want to maximize a function, the necessary changes are trivial (for example, if we want to maximize g(x), we may equivalently perform the minimization of –g(x)).

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22

Futures research insights and methods

Luiz Moutinho, Nuno Teixeira, and Miguel Lage

Today, it's as if we're driving 200 miles an hour and only looking into the rear-view-mirror.
Tim Mack, World Future Society

Abstract

We're living in a "new normal" environment where consumers play an increasingly active role and where companies are adapting to the disruptive changes and challenges that this consumer generated marketing is imposing.

Marketing research as a discipline must evolve to better capture and understand the essence of this new paradigm. In this fast moving business ecosystem, the ability to better read the future will work as a competitive advantage to proactive companies, who are in the quest of foresight.

Several methodologies, some of them proposed by leading researchers, are described to tackle this need, ranging from ethnographic research techniques where the researcher walks hand in hand with the consumer to expert based methods designed to gain insights from gurus in different fields of research.

Examples are provided based on the work developed at the Marketing FutureCast Lab, a partnership between the University and 20 large corporations from different business sectors.

Key words

Research methodologies, futures research, marketing FutureCast.

Introduction

Life must be thought and lived forwards.

The pace of change in the current competitive landscape makes it almost impossible for companies to anticipate the future. Change is happening at such a speed and in such a non-linear way that the current planning systems, despite being market-oriented, cannot accurately predict and plan medium and long-term horizon scenarios.

Companies are on the verge of losing their anticipation capacity and therefore losing competitive advantages in the face of the chaotic market disruptions that are happening in the dawn of the 21st century.

The future is uncertain and our society is experiencing a period of unprecedented change and upheaval; and the pace, speed and flux of change now make it clear that continuity can no longer be taken for granted. We are clearly experiencing a non-linear, chaotic, diffused and erratic path. Optimism, human trust and relevant research will be strategically blended to pave the way for a better future.

Our vision is that organizations must become intelligent, community-oriented and develop market sensing skills to achieve a foresight vision and culture. Success will depend on the ability to rapidly feel and sense the internal and external environment, interpret it and adapt strategy to face new realities. Managers must monitor developing trends and make use of collective intelligence, sensing, creativity and judgement to develop forecasts, projections and predictions.

Despite being widely recognized as something critical to understand so that proactive actions can be taken, little has been done inside companies or academic institutions to address the study of the "future". Few people take it seriously or consider the broad and complex range of concepts and social trajectories that make up possible scenarios. This mistrust of the future reinforces the "shackles" of being tied with the past.

Given the huge amount of change in today's society as well as in the business context, management of the future requires a totally new transformation which includes a brand new managerial function that used to be called marketing. New social values, new competitive structures, new forms of relationships are all part of the future equation that managers must respond to. They are finding a new balance between the time allocated for futures studying and scenario assessment, and the allocated efforts to embark on agility management and action design and implementation.

Schwarz (2008) suggested that futures studies will become more important in corporations. In particular, the improvement of methods such as environmental scanning, trend research, trend monitoring, strategic early warning and the scenario technique were suggested. It will be more rewarding for organizations to assess the future and not dwell on the past. This focus can then be witnessed in a myriad of performance metrics.

Futures research in marketing will be paramount in order:

- To advance with a huge number of trends, concepts and tools which are going to replenish the known stages of the marketing planning process, being: diagnosis, strategy and programming.
- To reflect upon new insights, structures and human roles for what is to be seen as the organization of the future.
- To dissect a myriad of important relevant factors that is imposing a direct impact on business ecosystems in the future, such as: technology, society and social values of the future, the new human lenses and consequent consumer behaviour, etc.
- To help explore a whole new set of programming foci around the traditional areas of marketing and decision-making. This will range from value-based marketing and intelligent dialogues to digital experiences and new performance metrics.

Agile and flexible corporations must develop advanced human sensing processes, to capture both individual and market perceptions. Companies must be prepared to obtain data about consumer feelings, reactions and responses to stimuli.

The future will be a complex interaction of emerging concepts, technologies, visions and common interpretations and more than ever before, people are interacting and shaping this future together. The "technological wall" serves as the catalyst for an explosion of conversations and micro-interactions between peers and between citizens and companies. Consumers are digitally empowered and are longing for this collective capacity of shaping the future. They behave not like passive sheep as they used to, but rather as important actors striving to follow the path to their preferred future scenarios.

Companies should leverage this commitment to long-term outcomes. Therefore new frameworks for planning and researching in the new marketing acumen (life blood) are necessary. Studying the future and using its research findings gives a renewed energy and stamina to decision-makers.

At first sight the future is a highly controversial field of study and analysis. How reliable can it be to study something and to advance knowledge regarding sets of events that haven't yet come into existence? In fact, for most people – either academics or practitioners – the future is a vague and blurred abstraction.

The methodological approaches and epistemology are much less proven as compared to natural science or even social science research. There are fewer scientific achievements in this area, but futures research is becoming more nomologically and experientially robust and relevant to society.

The ethos of futures research is an understanding of past and present patterns, and to determine the likelihood and explanation of future events and trends. You cannot stop the future and the speed and flux of change and mutation of the major facets of society – from value to consumers and from technological advances and competitive structures, all are dictating the need for futures research.

To study the future is to study trends and potential change which is likely to make a difference over the next 8 to 15 years. Studying the future is the undertaking of a multi-disciplinary examination of change, make-up and movements in all major areas of life, in order to find the interacting dynamics that are creating the next age, the next society.

Corporate managers should build scenarios based on the uncertainty, analyse the rationale behind such scenarios via the causal layered analysis method (and others) in order to create preferred visions of the future, and sometimes even use the backcasting technique to derive alternative implementation strategies.

Futures research cannot determine what will happen; however, it allows the development of knowledge about it by studying a range of possible, plausible and desirable futures, and how these futures might evolve and shape up. We have to make space for the unknown future, but we are getting more and more prepared for it. When managers are making choices based on rigorous futures research, they are not only anticipating but changing future patterns.

Incorporating futures research in the decision-making process helps managers arrive at various informed views and strategic insights, and then test and sense the various responses designed to minimize costs or maximize benefits to the organization and all the stakeholders. In this way organizations are not only becoming aware of critical facets of the future, they are anticipating and preparing for non-linear and turbulent scenarios, and can even clearly influence this very future.

In this chapter a number of analytical tools and methodologies are introduced to engage in structured and straightforward speculations and predictions about possible future outcomes which will allow a fresh new look of strategic thinking in marketing, including a new marketing logic, time-based management and sense & respond models.

The methodological frameworks and techniques available, when properly tailored to the emerging situation, will greatly facilitate the research process.

Researchers are not just igniting their spirit; they are utilizing an array of solid methods that, hopefully, will generate robust insights for managers to act upon. By incorporating systematic futures research in the decision-making process, managers will have a more solid basis than purely judgemental intuition. Better long-term planning and foresight will thus become possible as well as the development of hypothetical responses to potential changes. The dichotomy here will be to embark on radical and "break-the mould" decisions, or incremental decisions, one step at the time as a response to future scenarios.

The future, as we are becoming more involved in its study and assessment, comes and goes. It renews itself and only particular traits are left to be properly dissected and analysed.

But futures research techniques and methodologies do not exist in isolation. They can be selected and combined in several ways. Research is, after all, a formalized curiosity investigative process.

The methodologies described in this chapter were used in the context of the Marketing FutureCast Lab and are presented in the following pages, arranged according to their intrinsic nature:

- Human imprinted research;
- Expert based methods;
- Experimental approaches;
- Complex (eco)systems;
- Multilevel sensing.

The Marketing FutureCast Lab, which is the brainchild of its Scientific Director, Professor Luiz Moutinho, results from a partnership between ISCTE – University Institute of Lisbon (IUL) and 23 large corporations operating in Portugal that fund the research. The lab's main role is to identify and to analyse key trends in marketing, using research to advance the build-up of scientific and managerial knowledge.

All the activities of this research unit will focus on the future, bridging the gap between traditional marketing and the analysis of new paradigms of thought and new methodological approaches. Therefore, most examples reflect a real fieldwork research which was designed to analyse the impact of marketing trends in cross-industry context.

Human Imprinted research

Consumer shadowing

Consumer shadowing is a technique of research that consists in following individuals for a certain time period, usually at the point of sales, with the purpose of observing their behaviour and obtaining insights, through interaction and consumer intimacy.

It is a qualitative methodology that sets out to understand, as a whole, the context and environment of the consumption and how consumers relate themselves with products and services in a real purchasing scenario. With this kind of research the world can be seen in the perspective of those individuals who are being studied, finding the true meaning they assign to reality.

The approach to the respondents is based on a random selection of cases generated directly inside shopping areas using the Purchase Intercept Technique (PIT). The individuals are contacted while they walk and shop at the mall.

Through shadowing it is possible to observe directly the individual's behaviour when arriving at the point of sale, the interaction with products/services, and the satisfaction with the offers and to identify what has captured the consumer's attention (see Figure 22.1). Apart from this direct observation technique, a provocative stimulus is caused to the respondent regarding one specific topic of research, with the purpose of stimulating rich answers, that can represent strong evidence of his/her perceptions, behaviours and beliefs.

Consumer shadowing is thus a methodology which allows an in-depth understanding of how consumers relate to brands, and how they conduct the decision-making process, in a real consumption context.

The fieldwork is based on a semi-structured approach, where observation notes and an interaction script are employed for data collection. The script may include several standard and possible scenarios of real decision-making actions.

The shadowings should normally be conducted after the agreement of the respondents, who should also authorize the possibility of audio/video recording. This technique has a wide variety of applications when the purpose is to understand consumer behaviour in order to anticipate future trends.

As an example this technique can be employed if the researcher seeks to understand how consumers relate to brands or to specific products; why are some products chosen to the detriment of some others? Why is a specific brand appealing or not? Is sensory marketing appealing? What are the reasons behind the usual shopping trip of a single man? These sort of questions can be addressed with the use of consumer shadowing.

The data collected may allow the inference of perceptual associations and also demographic and psychographic elements can be put together to define schemes for adherence to future trends.

Based on these observations it is possible to verify the degree of "stickiness to reality" of the market and conclusions can be made about possible timeframes and the potential impact of marketing trends.

Figure 22.1 Consumer shadowing

In situ research/ethnographic episodes

Similar to other ethnography-related techniques, in situ research aims to explore and gain insights into the system of meanings of a certain cultural group (Geertz, 1973) which represents the object of study. It is a qualitative observational research technique which takes place at the consumer's home with the purpose of gaining deeper knowledge of how consumers act and take consumption decisions.

Researchers observe normal families in a real scenario inside their houses (see Figure 22.2), in a private non-professional context. The fieldwork will allow researchers to have snapshots of consumers' everyday lives – how they live, how they shop, how they work, how they act – based on the interactions during a significant part of the day.

In-depth immersion is the cornerstone of this methodology. The deepness and the richness of data collected is essential in this process of description and interpretation of observed phenomena.

As a futures research methodology, the main purposes are:

- Understand the impact of market trends in consumer behavior;
- Check the "willingness" of individuals to adhere to those trends;
- Recognize perceptual associations, adherence schemes and other elements (namely psychographic and lifestyle) that might be relevant and have an impact on the adherence to future trends.

Observation is one of the data collection techniques most used. Interaction with family members is a constant, allowing robust data collection, with a lot of relevant information about different topics related to attitudes and perceptions.

In order to analyse consumer behaviour trends, fieldwork researchers should be accurately briefed about the nature and characteristics of the trends under investigation, and about the different ways they could be expressed, so that the research is correctly oriented to the relevant data collection.

At the beginning of each "In situ", an explanation should be given to the members of the household regarding the objectives of the study. Also at this stage a warm-up and ice-breaking period is normally very important to gain intimacy and empathy with family members so that the interaction becomes more rich, open and honest. A confidence relationship pattern is crucial.

Figure 22. 2 Example of interaction in consumers' domestic environment – in situ research

The observation and the dialogues are conducted without any specific order or structure, even though the objectives of the research must be at all times in the mind of the researcher. Given this lack of structure, the interaction with the families and the application of this methodology requires a high level of flexibility and experience from the researcher.

Because the main objective is to observe behaviour in the natural environment researchers should try to minimize impacts and influence over the family routines and behaviours. For that reason it is recommended to reduce the use of video or photographs, since that could intimidate and influence families being observed.

Netnography

Ethnographic studies are based on the premise that consumers do not live in a social vacuum, instead they are part of a complex web of social interactions.

Robert Kozinets (2002) has developed this methodology of online marketing research – based on observations of online communities – to collect insights about new consumption behaviours.

Kozinets considers netnography as ethnography adapted to the complexity of contemporary social life, in which the intervention of technology, namely interactions in social networks or blogs are a rising trend. Online interactions are considered cultural and behavioural reflections, through which we can get a real comprehension of humanity.

Under this perspective online communities are the perfect place to find and interpret consumers attitudes towards products, services or brands, and also to understand the different meanings, rituals and experiences they have with those products or brands.

Netnography is a relatively unobstrusive, exploratory, descriptive and adaptable type of research, enabling a relevant, detailed and efficient gathering of data.

Comparing with traditional ethnography, this technique is more simple, quick and less expensive. It is also less intrusive, as traditional ethnography requires participant observation which generates intentionally some intrusion whereas netnography is mediated by internet access. Also compared with other qualitative methods such as focus groups or individual in-depth interviews, netnography is more naturalistic (or less artificial, when research is conducted in a fabricated environment) and less intrusive.

One of the limitations of this methodology has to do with the fact that the investigation is based on online communities, which might not be representative of the overall population and can be limited. Additionally the researcher is responsible for interpreting its observations, which can generate natural problems of biased or subjective information.

Kozinets (2002) proposes several steps to conduct a netnography:

- Entrance/Research planning:
  Structuring a research plan in order to define the most important data sources (e.g. online forums), adequate to the proposed research questions as well as learn as much as possible about those forums and about its participants.
- Data collection and data analysis:
  An analysis might be conducted of the most important threads and posts, choosing those that are more appropriate to the categories created, in order to answer research questions. Data collected in posts might be complemented with data collected by the researcher, regarding interaction observations between community members and interpretation of meanings.
- Interpretation:
  Posts collected and analysed allow establishing conclusions about the study. Triangulation with other data collection tecnhiques is essential to generalize conclusions.

- Ethical guidelines:
  Since data is collected without the knowledge and the corresponding permission of the individuals being studied, ethical guidelines must be followed: the researcher should declare his/her presence in the community; total confidentiality should be guaranteed; feedback of the members should be considered; specific posts that need to be quoted should have the permission of forum members.
- Forum members' final check:
  Results obtained should be subject to a check and validation by members of forums where data has been collected. This verification generates new insights and allows an ongoing research rather than static in time.

Biographical histories

Biographical histories are a type of social research methodology where individual subjects are invited to write stories on a particular topic thereby providing the researcher with a record of stories, memories and experiences of the self (or another person).

One of the most common ways is autobiographies. Individuals are invited to write episodes they have experienced as remarkable, always in the context of research questions that the researcher is analyzing. For example, ask for a description of one's experience with shoes. Or cars. Or chocolate …

Specific research questions should guide a script that directs the stories towards research objectives. The researcher questions the reasons for choosing an object, then analyses, critically, personal stories, social and cultural values that connect these stories to the topic of research. Like other narrative methods, they reflect how social actors use cultural and social histories to consubstantiate their identity and relationship with other people or objects.

Given the nature of the data analysis, centered on interpretation by the researcher, there is an element of subjectivity that must be taken into consideration throughout the analysis process. Stories can be a valuable and powerful tool of research as they allow the collection of data, directly in the words of the subjects and can therefore be used to study consumer behaviour, in particular to analyse the relations of self and self-concept with brands and objects.

The increasing digitization of western society means that newer forms of research based on biographical stories are based in blogs or social networks. In effect, they allow understanding and the gaining of insights into the relationship of individuals with various aspects of contemporary life and the world – like a reality show but written by the individual.

Expert based methods

Think tank

Think tank, as a forecasting technique, consists of an interactive and cooperative in-person group session with several experts; the aim is to generate, in an interactive and synergetic approach, strategic forecasts and foresight about the importance and articulation between trends, events and areas under study, based on several thinking groups (Bradfield *et al.*, 2005; Godet, 2000; Roubelat, 2000).

This is a projective technique (Dror, 1984), with "quasi-scenario" planning, aiming to promote among groups the flow of ideas as well as debate and deepen the discussion on impacts and consequences (Dror, 1984; Schoemaker, 1995). Sessions can include several methodologies of group dynamics and result analysis (Moutinho *et al.*, 2002; Godet, 2000), such as the ones given below:

- MIR – Measure, Impact & Rationale: this methodology aims to achieve the evaluation of the most important areas and trends, analyse its sustainability and impact capacity, as well as determine its underlying factors in order to predict evolutionary pathways;
- AJIC – Analysis, Justifications, Implications & Consensus: starting from a pre-defined combination of tendencies, the participants are given a set of preliminary data – outputs of other techniques – and are asked to:
    - Analyse data resulting from previously applied techniques;
    - Identify and quantify the expected impact of the tendencies for the several actors/entities and corresponding arguments;
    - Estimate the time limit of the tendency(ies);
    - Anticipate the need and intensity of the actors' response in terms of resources, strategies and/or other relevant dimensions;
    - Explain factors and rationale underlying the values and strategies presented.

The following key features stand out, regarding this technique (Dror, 1984; Moutinho *et al.*, 2002; Godet, 2000):

- Multivalent application: its dynamics allows working with different inputs, of a quantitative and/or qualitative nature; it's able to constitute the first approach to forecasting, presenting satisfactory results due to an interactive build-up with extraction of several insights throughout the different steps of the process;
- Animation: a more flexible approach, and apparently less structured at first sight, which allows for the use of different types of creativity and storytelling that stimulate the creative potential and the analysis of tendencies;
- Interactive approach: practice of face-to-face group sessions that allow the deepest levels of approach and explanation; the existence of a mediator in the different work groups limits potential bias inherent to social interaction;
- Scope of intervention: compared to potentially similar forecasting techniques (like Consensus), Think Tank offers more flexibility but less quantitative accuracy, because although it looks for a consensus, this is not necessary for the production of satisfactory outputs. It allows for an evaluation of the synergetic effects and interrelations among several tendencies and events (in spite of its less depth in comparison to a Cross-Impact Analysis), promoting the identification of critical aspects and elements potentially able to facilitate/inhibit the tendency.
- Systemic approach to the tendency: since it doesn't focus in a single aspect of the tendency, this technique not only allows the achievement of new qualitative insights about the developmental factors of tendencies but also provides information on the forms and strategies of reaction from the different actors involved in the anticipation of the most adequate approaches to be adopted. This allows for a global and integrative view of the tendency under analysis.

This technique offers flexibility and bivalence and can be used in a wide range of contexts and subjects (academic, political or professional), being particularly useful in situation like B2C and B2B situations, where different interests can be found among the actors who will potentially suffer the impact of the tendency (Godet, 2000; Schoemaker, 1995; Moutinho *et al.*, 2002).

One example of the ambivalence and flexibility provided by the methodology was a think tank on new trends in Organizational Management and companies' response to them conducted by Marketing FutureCast Lab. In a face to face working session, five group of experts were

invited to reflect on the role of ten trends simulating a "trip to space" where they would have to develop a new "fuel", considered the engine of the future development of enterprises.

The discussion comprised three discussion stages:

- Phase One – Countdown and launch: organization of three blocks of trends (Innovation, Processes and Structure) as constitutive modules for a rocket to be launched while providing a rational explanation;
- Phase Two – Experiments at the Space Station: the enrolled experts should prioritize the trends and select the five most relevant for the new "fuel", thereby determining what trends should be the focus of companies, supporting their choices and the impacts arising therefrom;
- Phase Three – The re-entry and touchdown: each group was invited to choose a strategy to promote the adoption of fuel, identifying risks, blockers and enhancers of its adoption in Portuguese companies.

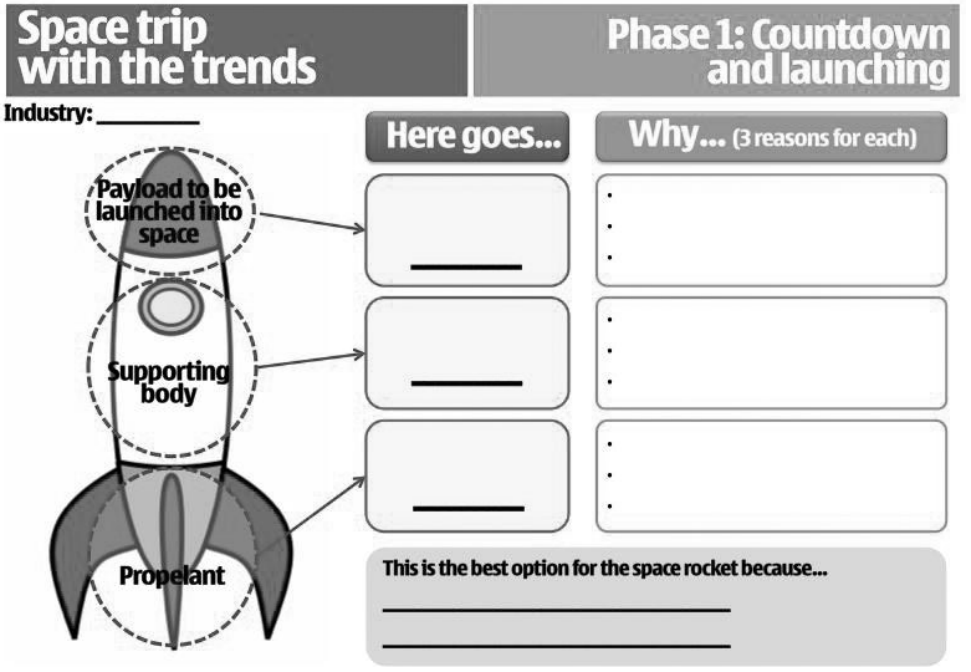

Figure 22.3 A template used for supporting Think Thank Phase One's discussions

Online group discussions

Group discussions and focus groups are a widely used type of qualitative research. Online group discussions are increasingly used to understand, in a prospective way, possible developments of marketing trends and their inherent structural factors. As a tool for promoting conversations in online or virtual environments, the patterns of interaction differ from traditional offline focus groups.

While some researchers argue that online dicussions are ineffective when compared to traditional focus groups, recent studies conclude that the participation levels tend to be moreuniform despite the fact that the comments are relatively shorter and more likely to use words of agreement (Schneider, Kerwin, Frechtling and Vivari, 2002).

Given the increase of computer-mediated interactions among human beings, traditional research needs to adapt and evolve. Online discussions can be carried out either in a synchronous or asynchronous way. While in the former, participants are online in real-time, in the latter participants will respond and interact whenever they find convenient. Both methods have advantages and disadvantages (Stewart and Williams, 2005) but in general way, this sort of research presents the following advantages:

- Immediacy of data and easier data transcription
- Higher geographical reach
- Participative data analysis by all the participants.

While these discussions can be held with anonymous consumers – depending on research objectives – they can be a very cost-efficient way to get in touch with both national and international experts or leading actors of a given industry or sector. In fact, the access to key informants or experts does not require physical presence, as in the past. Videoconference tools open new doors to the research with industry gurus and experts.

Current video webconference software has embedded audio and video recording of the discussions, allowing the transcription of all the conversations that have taken place.

As an example, this technique has been used by the Marketing FutureCast Lab to gather inputs from online marketing experts in order to advance knowledge about digital trends. The national and foreign participants who were selected to participate in several group discussions (no more than six or seven participants per discussion) were stimulated to discuss several aspects of online marketing, with the objective of providing new insights regarding the data presented by the discussion moderator. The meetings were held to extract some conclusions about the future impact, as well as implications for marketing and management, arising from several online marketing trends.

A data register protocol has been created, which included the research questions, the output desired and the answers of several participants to the different research questions.

Data transcriptions allowed a content analysis approach where specific subjects and interactive associations were identified among the different opinions. The conclusions were drawn based on thematic analysis and the degree of intensity of attitudes and opinions.

Futures Wheel

Futures Wheel is a methodology employed in futures research developed by Glenn (Glenn, 1994; Glenn and Gordon, 2003), frequently used to organize thoughts about the developments of a tendency or events (Mermet, 2008), allowing interconnecting and better judging of primary, secondary and tertiary consequences (Deal, 2002; Glenn, 1994; Glenn and Gordon, 2003).

This method constitutes a tool for structured and systematic brainstorming that helps organizing thought, leading the participants to an environmental scanning and to a sequenced and iterative evaluation of the impacts (List, 2004).

When using this procedure, the event is placed in the middle and its direct consequences arranged around it, occupying the first level. The indirect or secondary consequences (derived from the primary consequences of the first level) are assigned to the second level (Benckendorff *et al.*, 2009). For instance, if the crude oil price increases (event), fuel prices are raised (primary impact) and car circulation decreases (secondary impact). The different levels are organized in concentric circles and consequences are interrelated like tree nodes (single impact) or spider webs (multiple impacts).

Despite being similar to mind mapping, this method is stronger and more robust, enabling cross-analysing impacts derived from multidimensional tendencies and assuming a more useful role in forecasting and scenarios generation (Glenn, 1994; Glenn and Gordon, 2003; List, 2004). The main features of this technique are, according to the research (Glenn, 1994; Glenn and Gordon 2003; List, 2004):

- Visualization: the use of a physical support to organize the brainstorming appeals strongly to participation and supports the production and organization of ideas, conciliating a global vision with the possibility of partial analysis of a branch of consequences of the tendencies.
- Systematization: the organization of impacts in concentric and interrelated levels allows for a fast analysis and structuring of the discussion, potentiating output generation with better quality than the ones resulting from a more traditional brainstorming.
- Axis definition: with this technique it is possible to determine impacts and derived factors of the tendency that are not crucial *per se* but have a fundamental relevance for determining future scenarios because of its posterior impacts.
- Simplicity: it provides a quick and easy utilization whenever it is supported by a set of relevant experts, in order to guarantee a multidisciplinary background and encompassing approach.
- Robustness: this technique provides an easy way to generate a set of scenarios supported and validated within the different dimensions of the phenomena being predicted, as well as of human and corporate behaviour. The intervention of a moderator also facilitates the gathering of justifications and additional input for the choices taken.

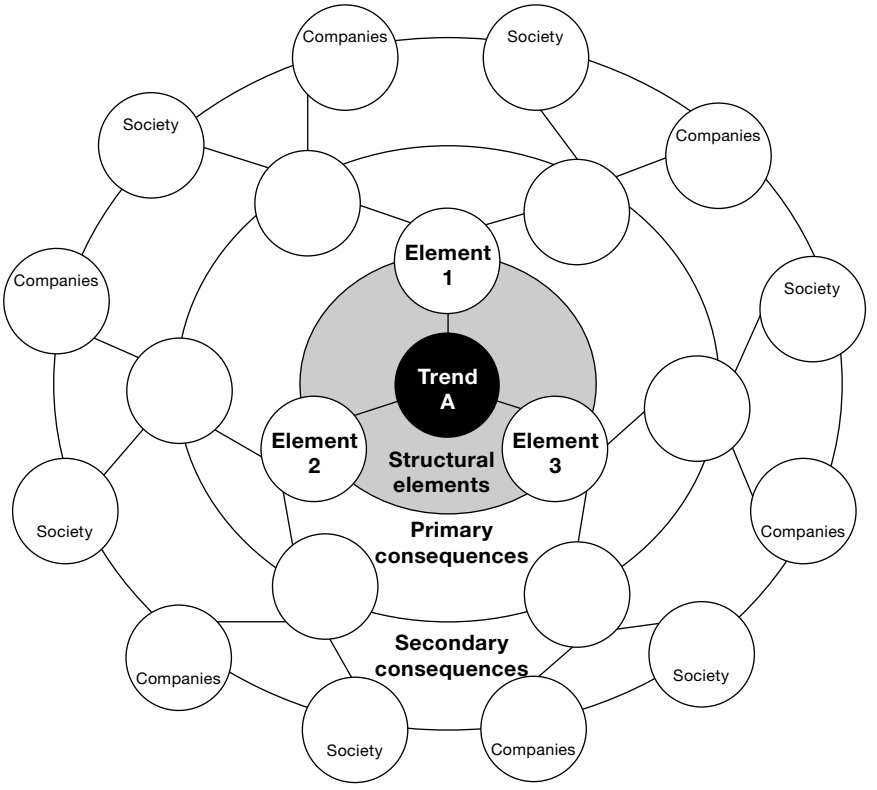

Figure 22.4 Futures Wheel used model

This technique has proven to be adequate for a variety of situations in forecasting, namely corporate strategy, consumer behaviour and technological and economic changes. However, its methodological principles allow for a wider usage, as far as futures research is concerned (Mermet, 2008; Glenn, 1994; Glenn and Gordon, 2003).

In a research conducted by Marketing FutureCast Lab on the evaluation of companies' readiness for structural changes in their communication and marketing activities due to new trends in consumer media consumption, device fragmentation and media platforms convergence, this methodology was used with very satisfactory results.

Each trend was broken down into its three major constituents and the participants in the face-to-face sessions, organized in work groups, were solicited to identify for each constituent two primary consequences, two secondary consequences derived from each previously identified primary consequence and, as a corollary, companies' responses in terms of readiness and ease of response to the challenges created. The resulting results and underlying rational were discussed in a plenary session.

Delphi Method with Consensus and Cross-Impact Analysis (CIA)

Delphi Method

The *Delphi Method* is an interactive and systematic forecasting method (Okoli and Pawlowski, 2004), conducted among experts in the subject under analysis. It aims, through a systematic process of response, analysis and feedback, to achieve a set of forecasts and anticipations of the future, worthy of a general consensus.

Within this prospective method, the panel of experts answers to at least two rounds of quantitative questionnaires about relatively complex issues with an uncertain evolution. They evaluate those issues from several perspectives (namely probability of occurrence, dominance timing and impact areas), also providing justifications and comments on those judgements (Helmer, 1977; Jeste *et al.*, 2010).

After each round, a facilitator compiles the answers and shares a summary of the panel's predictions, as well as the arguments on which the evaluations were based. The experts are then asked for a re-evaluation of their first answers, this time based on the knowledge of the predictions of their panels' peers. These second answers are then submitted and the process is repeated, ending only when given predefined criteria are satisfied as to number of rounds, stability of results, degree of consensus etc. (Green *et al.*, 2007).

This process of controlled feedback production has, historically, shown lower error margins and higher degrees of liability in the prediction of future scenarios (Rowe, 2007; Graefe and Armstrong, 2011). It is assumed that throughout this iterative process the answers of the group will all converge towards the "correct response"; also, the nature of the process facilitates the occurrence of some level of interactivity and discussion between the members of the panel, but avoiding group-dynamics phenomena that could bias the results, namely conformity pressure, compliance with a leader's judgement or resistance to change of opinion (Graefe and Armstrong, 2011; Taylor *et al.*, 1989).

The key features that distinguish this technique from other forecasting methods (Taylor *et al.*, 1989; Linstone and Turoff, 1975) are the following:

- Structuring of information flow – the collection of answers and comments follows a standard procedure, through a questionnaire (Okoli and Pawlowski, 2004); the facilitator controls the information flow, by filtering non-relevant data and eliminating potential bias of a group dynamics and of in-person sessions.

- Regular feedback: participants can revise and change their forecasts at any time, while in group meetings participants tend to maintain their opinion or comply with the leader's judgement.
- Anonymity of the participants: the participants' identity is not revealed, thus avoiding effects such as contamination and dominance of some experts' position over others due to their reputation, authority or personality. Keeping the participants anonymous also prevents the "halo effect", promotes free expression of opinions and admission of previous judgement errors.

Consensus

The Delphi Method can be adapted to in-person meetings, assuming the designation of *Consensus* – this is an interactive method of participation and decision based on the application of the ETE (Estimate-Talk-Estimate) methodology (Taylor *et al.*, 1989).

The consensus technique is a variant of the final step of the Delphi method, in which experts, in a group meeting, analyse the results achieved with Delphi and try to reach a broader consensus on the measures that evaluate tendencies (Graefe and Armstrong, 2011). At this phase, the differential between answers tends to decrease, converging towards a wider consensual solution, accompanied by an explanation of the underlying rationale (Linstone and Turoff, 1975).

The organization of an in-person group meeting at a final step of the Delphi Method can be considered as an attempt to enhance both the future scenarios generated and the rationale behind them through a collective discussion and opinion sharing between experts with different backgrounds.

Turning to this technique at an advanced stage of collection and data sharing aims to eliminate potential negative deviations from the collective discussion and tries to get the richness that the diversity of backgrounds and the personal discussion can provide (Gordon and Hayward, 1968; Taylor *et al.*, 1989). The results can be debated with the participation of external experts, in order to introduce moments and situations of disruption for the assumptions already made, leading afterwards to a reconstruction of the scenarios produced.

Cross-Impact Analysis (CIA)

Many forecasting methods are designed for exploring and validating the occurrence of events *per se*, not considering the enhancing/conditioning effects of the interaction between events, which, necessarily, alters their probability of occurrence and the forecasting of the extent of their effects (Helmer, 1977).

The CIA technique allows for the identification and evaluation of the impact of a full set of events, in interaction, highlighting potential changes in the probability of occurrence of a set of events as a consequence of the potential occurrence of one of them (Gordon and Hayward, 1968; Linstone and Turoff, 1975).

CIA is a probabilistic technique of forecasting (Weimer-Jehle, 2006) used in studies based on the opinion of experts, thus being considered as a (final) step of the *Delphi Method*. It is particularly useful in the analysis of hypotheses and in finding keys of agreement/divergence, thus helping to filter and to identify the most probable future scenarios (Helmer, 1977; Proctor, 2000).

The main features of this futures research method (Linstone and Turoff, 1971) are pointed out below.

- Systemic approach: the method appears as an answer to some shortcomings of the *Delphi Method*, in which experts were asked to evaluate events in isolation, without taking into account the interactions that, naturally, develop between them.

- Complete and systematized approach: this technique implies the construction of an interdependency matrix of the different events, placing in rows all events that may occur and in columns those that are prone to be affected by those events in the rows; the participants are invited to determine the impact/effect of the potential occurrences of each combination of events in the grid.
- Production of scenarios with greater likelihood: CIA assumes that the impact and probability of occurrence of an event are directly related with the occurrence of another events, thus, from the analysis of the existing correlations it will be possible to calculate, in an iterative way, the combined probabilities of occurrence and their correspondent impact, generating scenarios with higher future plausibility (Gordon and Hayward, 1968).
- Identification of critical events: the systemic approach strengthens focus on the evaluation of the causality of events (A affects B, B affects A and D, and so on) and, combined with the possible use of sensibility analysis, allows for the identification of critical areas (facilitators and inhibitors) for the development of emerging trends, extent of the impacts and generated scenarios.

These forecasting techniques are, nowadays, commonly used in almost every area of society, company management, technology, science and consumer behaviour (Green *et al.*, 2007; Linstone and Turoff, 1975), as long as the participation of a panel of multidisciplinary experts with recognized competence in their fields of work is guaranteed (Taylor *et al.*, 1989).

These synergetic methodologies were used to envision future developments regarding Strategic Marketing Management among Portuguese companies. Ten trends were selected and Marketing FutureCast Lab conducted a two-round electronic Delphi questionnaire evaluating the structural elements in each trend in terms of importance, estimated impact (in the economy, competitive structures, globalization and society and societal values in broader terms), likelihood of occurrence, dominance year and already visible impact.

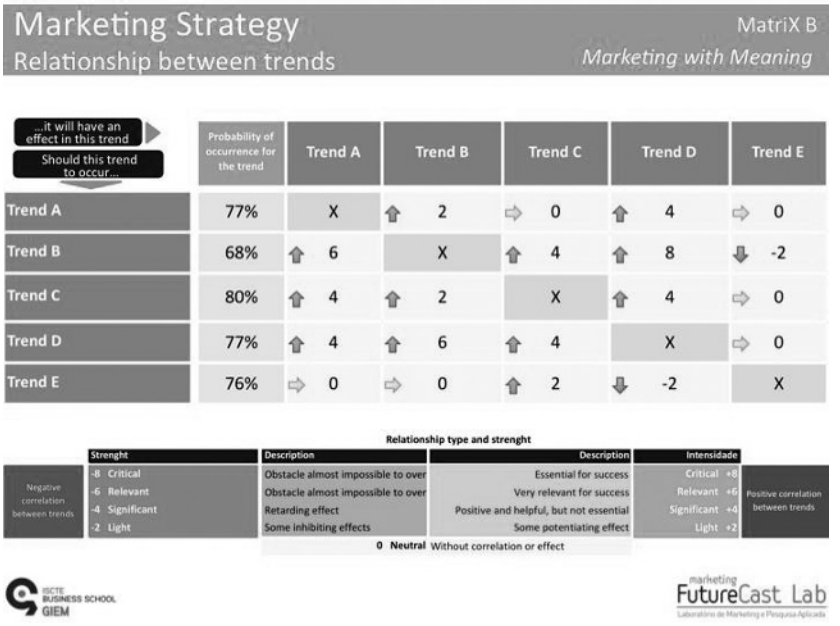

Figure 22.5 Cross-Impact Analysis support materials

The results produced by the 54 collected answers were then discussed in a full-day consensus face-to-face session with 45 top management experts in connected fields of expertise who made it possible to produce refined estimations along all the evaluation dimensions. The obtained results allowed the identification of primary and secondary trends and two analysis matrices were defined according to their underlying nature: Human and Structural Vision and Marketing with Meaning, each one comprising five trends.

The resulting groups were further investigated in a cross-impact analysis where, in a full-day session, all the trends composing the group were evaluated in terms of relationship type (facilitator, inhibitory or no relation) and magnitude established between them according to a previously defined Staple scale. Each group then presented the underlying rationale and estimated greater likelihood scenarios and identified major challenges and opportunities companies would face in several industries.

Experimental approaches

Mock Environment

The *Mock Environment* is an experimental research method, carried out in an artificial/laboratory environment; it aims to gather data on people's perception and attitudes towards the tendencies under analysis. Several methodological strategies are used, although the main emphasis is put on projective techniques and modelling (Donoghue, 2010; Louviere and Woodworth, 1983; van der Rhee *et al.*, 2009).

By using a controlled environment, the researcher aims to test the participants' reaction to the different components and dimensions of the tendencies being analysed. In order to achieve this, testing is done with a control group and one or more experimental groups, in order to purge eventual lateral effects.

The set of qualitative and quantitative data collected is analysed in order to determine the differential of reactions between the groups. The stimuli used are different: the control group is presented with situations that simulate normality, while for the other groups the stimuli provided are simulations of situations or elements of the tendencies (Gilbert *et al.*, 2002).

The creation of a laboratory environment, as well as the design of the experiences aims to minimize projective deviances, former exposure to similar communicative elements, elements with a previous high symbolic value (like brands) or any type of external contamination that could bias the results.

The following key features can be emphasized (Gilbert *et al.*, 2002; Louviere and Woodworth, 1983):

- Controlled environment: it minimizes the occurrence of contaminating stimuli and increases the focus of participants.
- Experimental nature: the robustness of results is incremented by using experimental protocols, namely the implementation of control groups.
- Used techniques: a wide range of techniques, derived from different disciplines (namely social sciences); it is worth emphasizing the use of computerized projective techniques and their many applications (Donoghue, 2010), although some subjectivity is always inherent to the interpretation of results.
- Complexity: the preparation of the protocols, namely in the construction of experimental conditions, selection of stimuli and participants, requires a high degree of planning and thoroughness. For this reason, this technique is often complex and expensive.

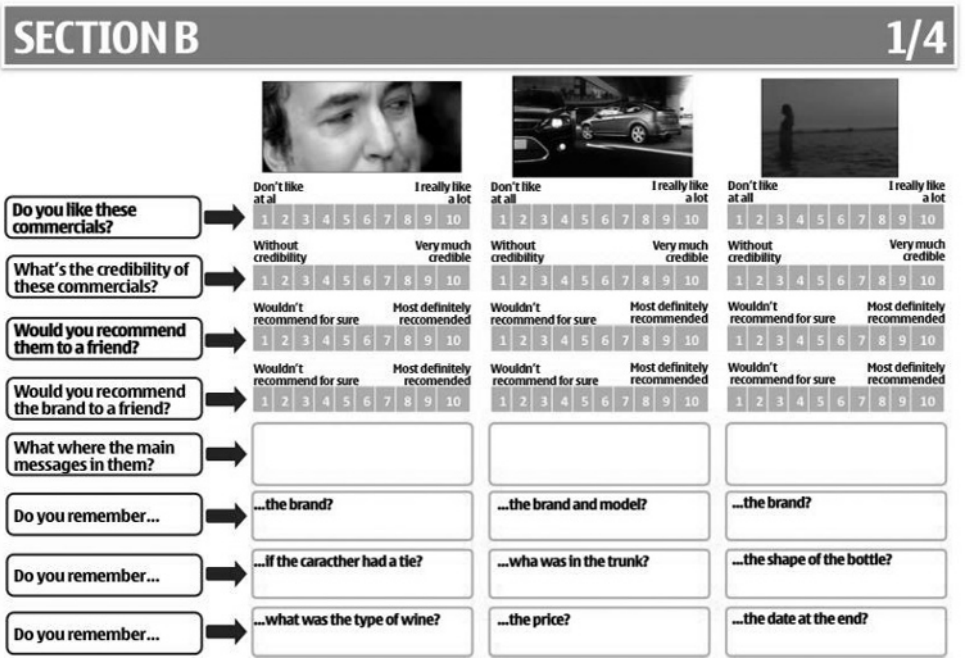

Figure 22.6 Example of participant's answer form

The complexity associated with the protocols tends to constrain the implementation of this technique; it is thus associated with tendencies that cause impact on consumers, both individually and in social dynamics, on the way they view the world that surrounds them, the way they communicate and build their personality, social identity and underlying motivations (Donoghue, 2010; Louviere and Woodworth, 1983).

As an example, we can refer the Consumer Media Lab, a mock environment research conducted by Marketing FutureCast Lab to assess and foresee consumers' reaction to advertising and other communication tools in the context of addressing larger trends regarding "co-" movements – co-production, co-distribution, co-research, etc.

Several groups of consumers, along with a control group, were exposed to several stimuli, mostly visual and of projective nature, recreating media consumption situations of TV spots, press ads, web contents and video, among other brand-related contents and advertising. Researchers observed the groups and an exit survey was conducted to provide additional quantitative data regarding in-group and between-groups consistency alongside with hypothesis testing.

Complex (eco)systems

Scenario planning/expert systems

Scenario planning consists in a narrative forecast technique that describes a potential path of events. It recognizes that some factors might be arranged to create non-linear future scenarios.

Scenarios, or the creation of alternative possible futures are based on environmental scanning which in turn is based on spotting emerging issues and weak signals that may end up having a high impact in the near future (Hiltunen, 2008). It is important to look at weak signals and

emerging issues and, should they have a probability to occur or to scale in the future, can be the raw data to anticipate future scenarios.

Among other advantages, this methodology is able to:

- Isolate a small number of critical decision variables;
- Encourage the construction of possible "alternative scenarios" and strategic planning for correspondent answers;
- Help participants to have a broader vision of the future;
- Incorporate subjective elements and macro variables that are not easily introduced in computer systems that require quantitative data.

The use of expert systems introduces a new dimension to scenario planning. An expert system consists in an interactive computer system that emulates human decision-making processes through the use of a knowledge base to provide a recommendation and to support a decision (Jackson, 1998). Recognized as part of the artificial intelligence field, expert systems play an important role in the accumulation, synthesis and dissemination of knowledge.

Expert systems are divided into two components: the inference engine and the knowledge base.

The knowledge basis is the heart of expert systems. It encompasses a definition of objects and relevant variables of what is under analysis, as well as the relationships that are generated between those objects and variables.

The several pieces of knowledge available are put together in an inference engine, designed to grow in an evolutionary way, growing the expertise as it grows the knowledge base.

Working together, scenario planning and expert systems improve decision-making systems, through future simulators, challenging strategic thinking and stimulating top management learning skills. Additionally they promote higher consistency in decision-making since knowledge is defined in a system with parameters and might be available to all employees.

The Scenario planning methodology has been used to collect input from marketing professionals regarding future developments in B2B trends (in the scope of the activity of Marketing FutureCast Lab). A live session was conducted, in which 32 professionals, chosen for their professional or academic background, participated with the objective of building a knowledge base for the expert system.

For each of the identified B2B trends, some potential key factors that could influence them were identified. In total, 43 factors were identified, that could assume different future paths. Participants were divided into several working groups, responsible for creating scenarios with relative freedom and presenting strategies for companies to deal with those scenarios as well as describing the rationale that lies behind each strategy.

The expert system was designed logically to try to find at least one answer (a strategy), taking into account the inputs of one non-expert user. In other words, through if-then rules, the system puts the questions necessary to find one (or more) strategies suitable for each possible future scenario.

The focus of Scenario planning in the referred event was different from the one used in the context of a particular enterprise, since the objective was to consider the potential impact of factors associated with trends that affect companies and industry in general and not for a specific company. Nevertheless, several other studies employing this methodology refer to specific industries or companies such as tourism, retail banking, the airline industry, etc. (Davies, Moutinho and Hutcheson, 2005; Davies, Moutinho and Curry, 1995).

Visioning. Preferred futures

Visioning is an exploratory research methodology, qualitative, commonly used to predict future scenarios. It involves understanding what might happen – likely and alternative futures – and a clear, shared commitment to creating the organization's preferred future (Bezold, 2009).

The Visioning process is based on the premise that the images individuals have about the future influence today's behaviours, guide their choices and influence decisions. That is, the analysis of data collected through this methodology provides an idea of how consumers' future beliefs and mindset drive their behaviours and purchasing decisions in the present.

By visualizing a future scenario, individuals express their values, wishes, fears and expectations. Those images of the future, namely of the preferred or aspirational futures, can be either positive or negative, causing different cognitive responses, taking into account individual perceptions.

Aspirational futures and scenarios with expectable and visionary pathways enable smarter strategies and foresight inside corporations, with more effective creation of the future (Bezold, 2009). Given the outlined possible and preferred futures, organizations should develop strategies to cope with them. In fact, the goal of foresight is precisely to make better and more informed decisions in the present.

When conducting the fieldwork, it's necessary that the researcher has a structured and directive approach so that consumers do not create an idealistic wishlist, but a realistic and achievable scenario.

This methodology has been put in practice to investigate Consumer Behaviour trends. Several Visioning sessions were carried out, and, at a preliminary stage participants were prompted to think about present situations, seeking to clarify possible correlations between future trends and positive or negative experiences they were experiencing in the present.

In a second phase the researcher appealed to the imagination of participants, asking them to express their desires, fantasies, aspirations and visions of how the future would probably be and also how the future should be in terms of the relation between corporations and consumers.

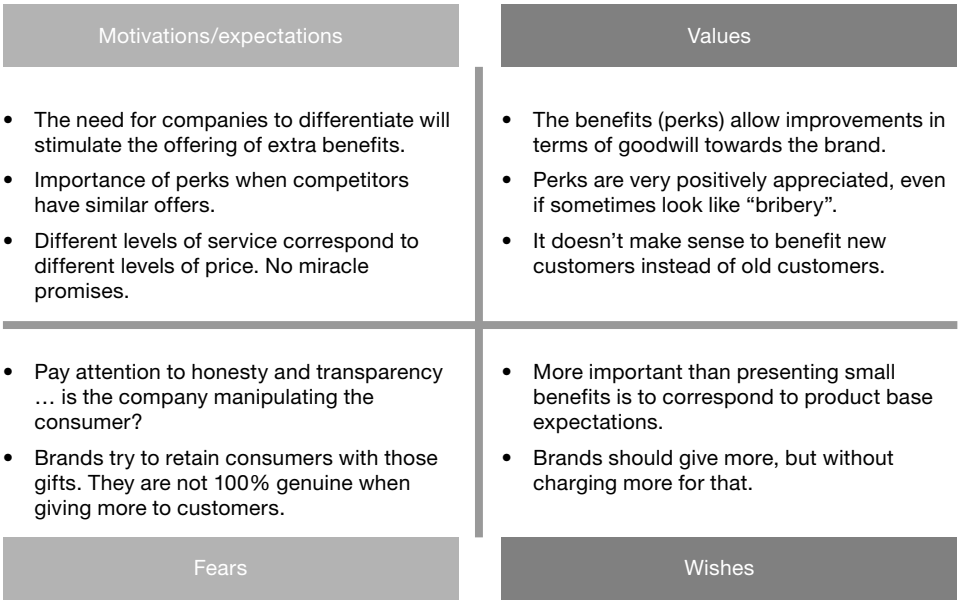

Figure 22.7 Example of Data Analysis related to the trend "Perkonomics"

There was also an effort to assess the real possibility of those preferred futures occurring, that is, whether the most optimistic visions captured during the "fantasy phase" had limits or barriers to really coming into being.

To stimulate the discussion some projection stimuli were used (pictures and videos) and small pieces of text. For each Consumer Behaviour trend, the main key ideas were categorized and grouped in four quadrants, reflecting Motivations and Expectations, Wishes, Fears and Values.

Since the categorization implies a subjective analysis, a cross-check between researchers is advisable to reduce bias and to better capture the hidden motives and beliefs.

Analytic Hierarchy Process

Developed by Thomas Saaty (1990), the Analytic Hierarchy Process (AHP) is one of the most widespread techniques for multi-criteria decision-making.

The AHP is a powerful method, designed to facilitate the decision-making process through the use of empirical data as well as subjective judgements about the phenomenon being addressed.

The AHP process includes 3 major components:

(1) Decomposition of the problem:
At this stage, the problem is decomposed as a hierarchical decision tree, where each level is a set of criteria representing a sub-problem, which in turn can be decomposed in another set of related elements.
This structure is an efficient way to deal with the complexity of the problem and should be geared towards solving the global problem.

(2) Comparative judgements:
Each participant makes systematic pairwise comparisons between the different elements of hierarchy, as well as among sub-criteria of each element, using a quantitative scale. This is a scale of 9 points, ranging from 1 (equally important) to 9 (extremely important). The scale assesses the relative importance of each element to achieve the overall goal that has been established.
This method of comparison is the basis for the collection and analysis of data and forms the "heart" of the AHP. Structurally, the hierarchy is a series of matrices which participants are challenged to assess in terms of relative importance (see Figure 22.8).
The AHP converts these evaluations to numerical values that can be processed and compared. A numerical weight or priority is assigned to each element of the hierarchy, allowing diverse elements, often not measurable, to be compared in a rational and consistent way. It is this ability that distinguishes the AHP from other decision-making methods.

(3) Synthesis of priorities:
Priorities are calculated from the obtained responses, to establish the contributions of each criteria and sub-criteria to the overall objective. This is achieved by ranking each element of the hierarchy based on their relative contribution to the element at the level above. These figures may, therefore, produce a comparison of several possible courses of action.
Additionally the internal consistency of responses is calculated. The ratio of inconsistency indicates the likelihood of a randomly performed comparison. A ratio of 0.2 indicates a 20% probability that the responses were done randomly. Typically, a consistency ratio below 0.1 is considered acceptable.
The AHP was developed to solve specific problems involving the prioritization of potential workarounds. Problems of resource allocation, benefit and risk analyses, forecasting

Figure 22.8 Representation of a screenshot [Comparison matrix in software Super Decisions]

choices or marketing decisions involving a number of participants with conflicting perceptions and objectives, can be answered by this type of technique.

It can be used in complex situations where there are no quantitative or measurable criteria, such as the construction of non-linear hierarchies and assigning weights based on the insights and expertise of respondents.

Applying this method to the analysis of sales trends yielded, as output, the weight of each sales strategy to maximize sales results and long-term sustainability for companies.

The AHP process was conducted with top sales and marketing managers who discussed strategic implications of different sales trends. The outcome was a better understanding and possible designs of strategies to tackle the ultimate goal of optimizing sales results and sales productivity.

Morphological Analysis

" … within the final and true world image everything is related to everything, and nothing can be discarded a priori as being unimportant."

(Fritz Zwicky, 1969)

Fritz Zwicky developed the Morphological Analysis to analyse complex problems and develop future scenarios. It was designed to tackle issues with multi-dimensional, non-quantifiable problem solving, where the techniques of causal modeling or simulation would not be adequate or even work.

Morphological Analysis is a method for identifying and investigating the total set of possible relationships or "configurations" contained in a given problem (Ritchey, 1998). Thus, for a given problem relevant variables are identified and for these variables several possibilities for action are outlined.

Instead of trying to find causal relationships (difficult to obtain from a certain level of complexity of the problem), this methodology is based on human judgements and the internal consistency of these judgements (Ritchey, 1998). Non-quantified modelling relying on

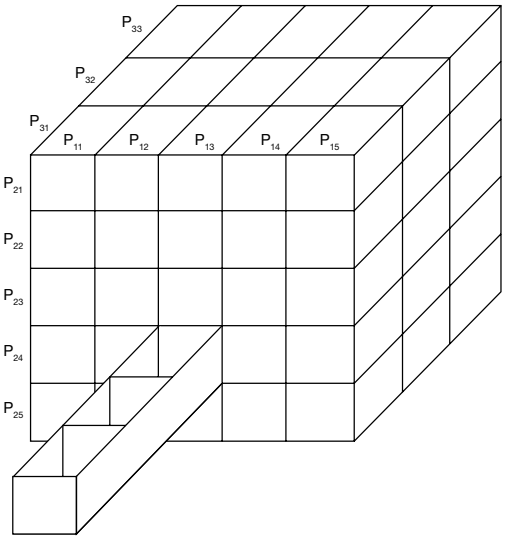

Figure 22.9 Example of a "Zwicky box" with three dimensions (Zwicky, 1969)

judgemental processes will result in logical combinations of structural factors which will lead to scenario design for the problem under analysis.

During fieldwork, it's necessary to identify the several dimensions of the research problem and each dimension must be provided with all the values that it may assume. The combination of all those values and dimensions will configure the "morphological box", in a n-dimensional matrix. Each cell of the matrix represents a specific configuration of the problem.

Since most problems have far more than three or four dimensions, each with a potentially huge number of possible values, it would be impossible to design a strategy for each combination. The next step in the process is thus to reduce the analysis to a smaller "solution set" of internally consistent configurations through a process of "cross consistency assessment" (Ritchey, 1998). In fact, several configurations of the morphological box are impossible or incompatible. The "solution set" will then be the workable field where inputs about future scenarios and strategies will be designed to solve the complex original problem.

This methodology was used by the Marketing FutureCast Lab to map logical and probable scenarios in sales management with the ultimate goal of achieving better sales results and long-term sustainability. Several working groups of five or six experts were formed, and each group worked to find solutions to a set of logical scenarios.

The box was built using morphological parameters in a multidimensional space. Each group was asked to find a logical solution to achieve the objective, choosing a condition in each dimension or presenting a new suggestion.

Simulation

The notions of forecast and simulation are, quite often, confused and/or used interchangeably, although they are different in nature and application as far as futures research is concerned (van der Duin and den Hartigh, 2009).

A forecast refers to a projection made for a population on the basis of historical data and past growth rates that may or may not be changed in order to reflect modifications of the factors underlying or influencing them. A forecast can be produced relatively quickly since, in its

essence, it is a statistical/mathematical operation that analyses and applies several growth rates to a single variant of a population, for a specific number of time periods (Vanharanta and Easton, 2010).

The simulation aspires to be a complete representation of a whole ecosystem, that is, a model that reproduces the movements and interactions between different actors of a system so that the potential impact of changes in the processes, procedures or resources can be estimated. It takes into consideration all synergetic and iterative effects within the repercussions on the system throughout a period of time (Eldabi *et al.*, 2006; Gordon and Stover, 1976). In spite of being similar, and often used in a complementary way, these two techniques use different methodologies and datasets to produce their estimates (Eldabi *et al.*, 2006).

This technique relies on computer-based tools, as well as on multiple advanced algorithms to represent reality and elucidate potential unknown or infrequent relations (Epstein, 2011; Agami *et al.*, 2010). It is used to analyse behaviours and understand processes. In spite of the recent computational developments, these techniques are still limited, since they consist of a simplification of more complex systems in order to increase operability and facilitate the comprehension of results (Vanharanta and Easton, 2010). This simplification implies, however, the exclusion of some dimensions and relevant variables, namely in more complex and multilevel questions (Walker *et al.*, 1998).

The main characteristics of this technique (Epstein, 2011; Agami *et al.*, 2010; Gordon and Stover, 1976) are:

- Systemic approach: a simulation model must accurately reflect the potential processes and behaviours of the actors in the system, in order to evaluate how the changes affect the ecosystem; furthermore, it finds critical points of amplification or reduction of the impact throughout the reproduction of effects;
- Widespread information: the need for information grows proportionally to the number of observed characteristics in the population, since the increase in the number of aspects considered represents an additional component of a system that needs to be intertwined with the other components already considered;
- Evaluation of the alternatives: once a valid simulation model has been created, it can be used to evaluate multiple alternatives of development of the phenomena, as well as to examine the different alternatives of answers;
- It requires advanced resources: besides the availability of a great volume of information, the construction of complex models requires time and a set of advanced computational resources, namely for the use of algorithms capable of representing behaviour patterns that are less perceptible;
- Quantification: the use of computational models generates outputs quantified for the degree of impact and with low margins of associated error (when compared with other methods).

There is a wide potential area of implementation for this technique. For instance, it can be applied within contexts such as corporate strategies, social change, cultural and technological adhesion, as well as in other circumstances that involve multilevel and multifactorial impacts (Epstein, 2011; Gordon and Stover, 1976). Nevertheless, due to its complexity, the use of this technique depends on the feasibility of accessing resources (namely relevant information and time), as well as on the ability to identify the most relevant variables. This will enable the researcher to reduce complexity both in the construction of the model and in the analysis and management of results.

This research methodology proved its utility and robustness in a research on B2B trends conducted by Marketing FutureCast Lab on expected changes in strategic relationships, namely those due to the use of intelligent systems, pro-social behaviour and social (media) enterprises. In this case, a knowledge and relationship database was built with information gathered in individual meetings and group discussions with experts.

In exhaustive work sessions, 43 variables of the competitive environment were explored regarding possible scenarios and different evolution paths, with the development of strategies for companies to explore the competitive disruptions identified being generated. The participants could also input additional and divergent scenarios to enrich the simulation and underlying algorithms and behavioural assumptions.

Multilevel sensing

Causal Layered Analysis (CLA)

This model, developed by Sohail Inayatullah, deepens the knowledge of the factors that promote tendencies in order to generate different alternatives of futures, instead of developing a single vision of a specific future. This purpose is achieved through the investigation of present and past situations (Inayatullah, 1998, 2004; Riedy, 2008).

CLA focuses on the comprehension of the vertical dimension of tendencies and future studies, assuming that the way a given problem is formulated (Riedy, 2008) (and approached, in this particular case, the trend) changes the potential solutions and the performance of the key actors involved in the promotion and development of the trend (Voros, 2008).

CLA consists in a thorough analysis and thinking developed in four different levels in an increasing deepening of time dimensions (short-term) and immediacy/visualization (real-imagined), as a way to unpack discourses (Inayatullah, 1998, 2004). The four levels are:

- Litany – the method starts with a construction of the predominant and unquestioned vision of the present reality.
- Social system & structure – this level approaches a systemic perspective, by questioning the vision and data resulting from Litany, presenting social explanations for those visions, beliefs and data.
- Worldview/Discourse – in a deepest approach, the way the different stakeholders build the two previous levels is examined and unmounted in order to enlighten the assumptions, visions and differences (ideologies and discourse) involved.
- Myth-Metaphor – the fourth and last level shed light on the unconscious emotive dimensions of the issue.

The challenge is to carry out a research that is able to approach iteratively the multiple levels listed above, combining several perspectives of knowledge whilst creating distinct alternatives of possible and more authentic futures by considering an integrated transformation. CLA's starting and ending point involves questioning the future, in its overall dimensions (Inayatullah, 2009; Stewart, 2008).

The main characteristics of this method (Inayatullah, 1998, 2004; Riedy, 2008) are the following:

- Knowledge integration: as a theory, CLA seeks to integrate empiricist, interpretive, critical and action learning modes of knowing (loosely, science, social science, philosophy and mythology);

- Creation of multiple scenarios: As a method, its utility is not in predicting the future but in creating transformative spaces for the creation of alternative futures;
- Increased range and richness of scenarios: the multidisciplinary abundance of knowledege used generates several scenarios, adequately supported, through the combination of distinct information and visions of reality among workshops' participants;
- Full spectrum analysis: the method appeals to a wider range of individuals through incorporation of non-textual and artistic elements, including dimensions (namely cultural and social) often neglected;
- Analysis depth: by extending the discussion beyond the obvious to the deeper and marginal;
- Context: data is not seen by itself, but valued in a broad context, at an ecosystem level.

The characteristics of this method make it particularly useful in approaching social tendencies and phenomena (medium to long-term) namely in the development and implementation of policy actions.

Means-End Chain

The power and precision of forecasting techniques are strongly related to the way they explore the interrelation of the phenomena under study within a much broader and more complex ecosystem, in which the result/forecast results form an articulated sequence of multiple events.

Within this field, the consumer's process of decision-making is of crucial relevance; thus, the understanding of this process, from a scientific and operative perspective, is quite important (Graeff, 1997). Nevertheless, traditional methods fail to present a technique that is able to connect the knowledge of the product's characteristics, on the one side, and the consumers' needs and own characteristics (aims, attitudes and wishes) on the other (Gutman, 1982).

The means-end chain model is a conceptual technique that allows the understanding of how consumers perceive and consider, both individually and as a group, the results of using a product (Pieters *et al.*, 1995). The model assumes and explores the connection between consumer and product through the construction of an associative net between the several types of attributes (material and non-material) of the product and the physical and psycho-social consequences associated with its usage so as to, at a higher level, connect them to the values underlying its consumption (Graeff, 1997; Pieters *et al.*, 1995).

The product's attributes are ways through which its aims and values are achieved, through the consequences and benefits that derive from the products – goods and services are seen as means to satisfy needs, conscious or not (Bagozzi and Dabholkar, 2006; Zeithaml, 1988; Pieters *et al.*, 1995). The main characteristics of this technique (Pieters *et al*, 1995; Zeithaml, 1988) are listed below:

- Holistic approach: the use of associative nets allows the identification and more accurate contextualization of the phenomena under research, generating a more restricted approach by taking into account the articulation with other phenomena that are able to increment or minimize its impact.
- In-depth research: it provides a thorough analysis of the underlying motives, by using detailed methods of qualitative research – such as personal interviews based on laddering techniques – thus allowing for an approach to strength and adhesion (conscious and unconscious) to the phenomena under study, namely regarding non-articulated needs and identification of potential conflicts.
- Structuring: the assumption and analysis of the existing system of associations makes it possible to define a mental hierarchy of values, emphasizing potential consequences (current

or future) of using the products, as a result of less structured needs, but more resistant in terms of time, related to participant's individual and social expression (for instance, the desire for acknowledgment, power or self-satisfaction).

- Clarification of the missing links: the methods used to study and estimate the consumer's behaviour, particularly as far as forecasting is concerned, do not always fulfil expectations due to the lack of relation, conscious and relational, between knowledge of the product and of its characteristics and the needs they answer to; this technique allows for exploring the connections that are established at the emotional level, that feed the pseudo-rational and conscious process.

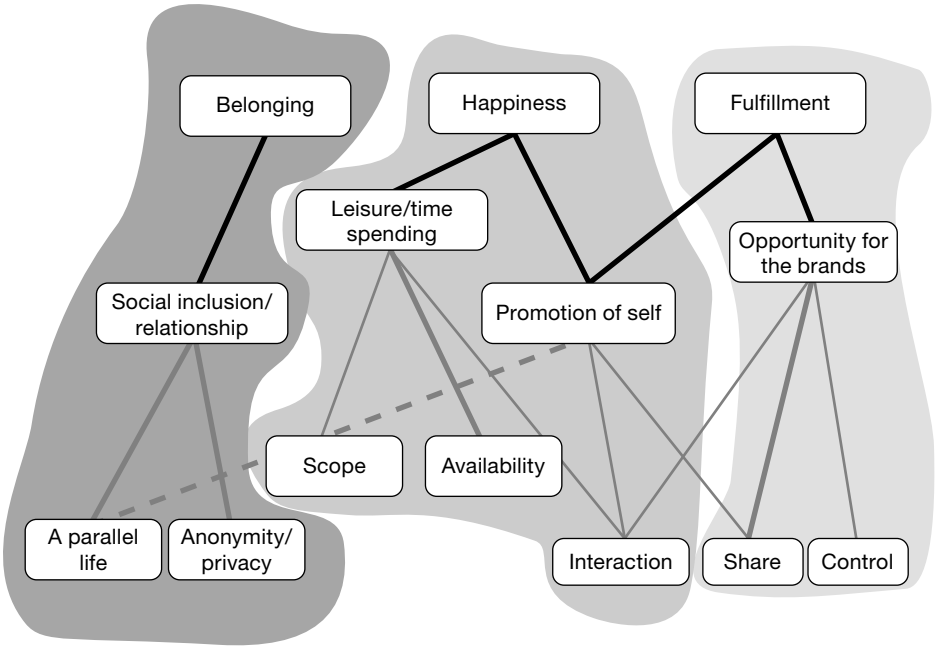

Figure 22.10 An example on the schematics representing a means-end chain of trends connected with social media usage

This technique is particularly adequate to the forecasting of behaviour-related trends in consumer decision-making and buying patterns in FMCG, technology and other sectors regarding products' great emotional engagement and related to image and social projection (Bagozzi and Dabholkar, 2006). The search for individual and personal references makes it unfit for implementation within corporate contexts, but strengthens its applicability to situations of consumer decision-making at the individual level.

Marketing FutureCast Lab used this research approach to access consumers' and experts' visions about the possibility of success of emerging business models and ecosystems. This approach was the mainstay of a series of face-to-face meetings and the basis for a presentation and discussion of conclusions and rationale in a plenary of experts, acting as validators.

Backcasting

The backcasting technique is used in futures research that starts with the generation of a desired or preferred future scenario and goes through the determination of the set of actions that need

to occur or be implemented (from now into the future) in order to make that scenario possible (Benckendorff *et al.*, 2009; Mermet, 2008; Dreborg, 1996).

It works differently from forecasting, since instead of setting off from the present state of the art regarding tendencies, this technique starts by identifying and defining a potential and ideal future scenario (Dreborg, 1996; Robinson, 2003), followed by the identification of the events and developmental axis that must occur in order to connect the start point (the present) and the expected future (Mermet, 2008; Ebert *et al.*, 2009).

Backcasting is based on the assumption that the individual's behaviours and choices in the present are influenced by their wishes for their own future, mainly focused on short-term perceptions and impacts; these wishes determine people's decisions in the present, as well as their perception of feasibility (Quist and Vergragt, 2006). The images of the future generated in the process can be positive or negative and are able to produce different types of response, as a result of the different perceptions involved (Ebert *et al.*, 2009; Holmberg and Robèrt, 2000).

The main characteristics of this methodology (Dreborg, 1996; Ebert *et al.*, 2009; Höjer and Mattsson, 2000; Quist and Vergragt, 2006) are:

- Focus on the future: promotes the generation of ideal future scenarios that leads the participants to overcome an eventual excessive focus on the present; it goes beyond a basic projection of the trends of the present, in which the future is an improved version of the past; it generates differentiated axis of development.
- Generation of disruptive scenarios: the consideration of future ideal scenarios is mainly based on values and wishes of the participants, thus creating strong and positive dynamics in order to find innovative and alternative solutions, minimizing the natural tendency to overrate predictable obstacles in a near future.
- Accessibility: easy-access and feasible methodology that can be used within a wide range of participants, from experts in the areas under analysis to generic consumers, even those unacquainted with forecasting activities and/or specialized strategic thinking.
- Identification of pivotal developmental axis: this methodology allows the identification of several alternatives of development and associated events, determining the most probable and/or impacting paths, as well as the developmental axis, critical events and maximum timing of development on the roadmap of the imagined future.

This technique is particularly useful to use within groups of participants without experience in forecasting and/or in cases that require the generation of alternatives to current developmental patterns (Ebert *et al.*, 2009; Höjer and Mattsson, 2000). It is used for prediction in areas related to sustainability, resources usage, energy and urban planning, as well as in technological endeavours (Dreborg, 1996).

Backcasting was revealed especially useful for a Marketing FutureCast Lab's research addressing emerging trends in Sustainability and Econ-sumerism, allowing a deeper understanding of consumers' diverging paths and critical points in a series of structured group discussions that identified relevant tipping points and the need for further actions for companies beyond what was called "green washing" and loss of relevance.

Further research was conducted by Marketing FutureCast Lab with the use of this methodology with tech-related trends such as Hypermedia, Glocalization and Humanware. Group discussions provided the adequate background for data collection among experts and consumers alike.

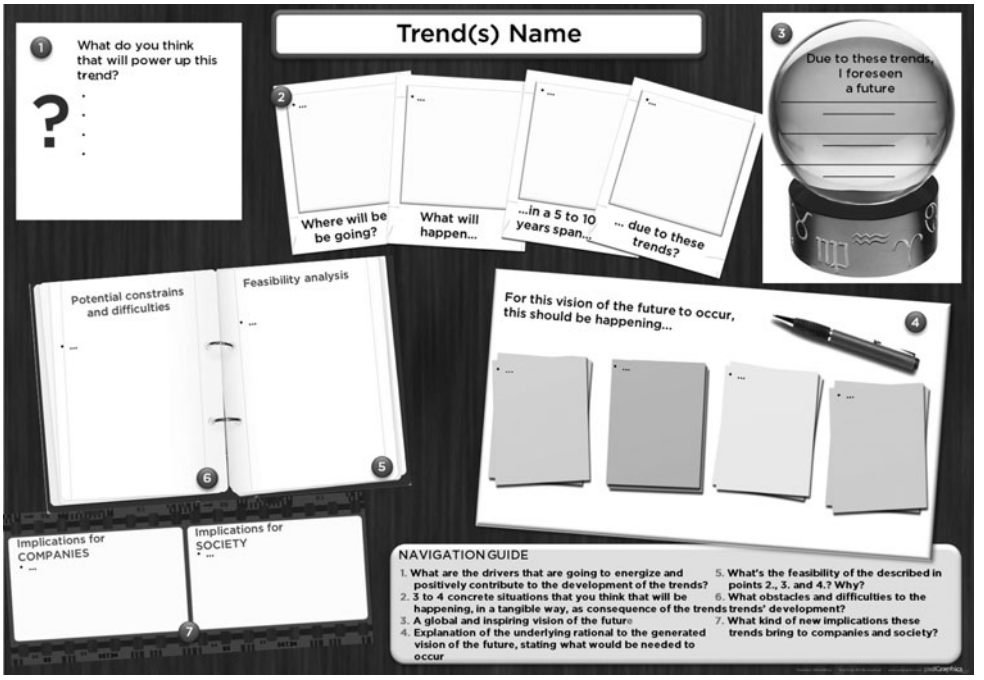

Figure 22.11 Representation of a screenshot [Response template for the participants in the group discussions (example)]

Brain monitoring with reference class forecast

This technique, of a qualitative nature, developed by the Marketing FutureCast Lab team at ISCTE-IUL, under the coordination of Professor Luiz Moutinho, aims to project and map the pathways of development and adoption of tendencies.

This technique is based on individual work sessions implemented with experts, using a semi-structured script for the interview and animation. The purpose of each session is to identify the adhesion potential of each tendency, gathering the expert's opinion, expressed in an open and free way in a first step.

At a second stage, each participant is asked to confront his/her opinion with the other experts' statements, also referring to other tendencies and elements that can cause impact regarding the tendency under analysis. This way, in a third stage, a new consensus is reached, with a shared view, thus reducing the bias and dispersion at the projection and prediction stage (Flyvbjerg, 2006).

The build-up construction of a shared reference is boosted by the implementation of the reference class forecasting (Flyvbjerg, 2008), i.e., a technique that estimates the result of an action based on developmental characteristics of past events similar to the ones being predicted – a procedure developed by the economists Daniel Kahneman and Amos Tversky (that was crucial for granting Daniel Kahneman the Nobel Prize in Economics in 2002).

As to the key features of this procedure:

- Significant decrease of forecasting errors: this technique allows avoiding potential overestimations of the tendency caused by excess of confidence, underestimation of costs and risks, as well as potential exaggeration of results and impacts of the tendency due to the

expert's close relation to the area and/or event to be predicted (internal entropy). The procedure, through the reference class forecasting, allows the introduction of an "external view" by leading the expert to compare the tendency subject to forecasting with the pathways and results obtained in similar situations for other reference events (Flyvbjerg, 2006, 2008).

- Externalities reduction: the presentation of a build-up scenario and potential divergence moments leads the expert to considering a wider set of factors that might be overlooked in a first stage. This allows for a wider thinking on the impact of the tendency, reducing externalities, i.e. costs and benefits generated by an activity, but that were not reflected in the evaluation carried out previously (Kahneman, 1994).
- Gathering of consistent results with small samples: due to the build-up effect, this procedure facilitates the collection of results with a reduced number of experts in the sample (average of 12 to 15 experts), since it easily provides a consensual shared view.
- Easy implementation: the technique requires just one (but highly qualified) interviewer and a 1.5 hours' work session for each respondent. It allows a full approach of up to 4 or 6 tendencies in each session, allowing for an easy time management and shorter timings for the implementation of the study and the gathering of results.

This procedure is particularly useful in trend forecasting in a corporate context, namely B2B, as well as in situations where the number of experts in the areas being approached is reduced (Flyvbjerg, 2006, 2008). Its application is also recommended in ranges of activity related to technology as well as for the analysis of highly complex and specific tendencies, especially at a technical level.

Due to this special adequacy to the analysis of highly complex trends, this methodology was used by Marketing FutureCast in research for trends relating innovation promotion and adoption among Portuguese companies. A total of 11 high-profile specialists were interviewed in one-hour face-to-face session where they shared their visions regarding the adoption state and estimated development of four to six trends.

After each work session, the main ideas and shared references were analysed and evolution scenarios were (re)constructed and compared with similar adoption and development curves for other products, technologies or industries. The estimation of an associated occurrence probability allowed for a build-up and consolidation of new consideration sets and scenarios to be used in the forthcoming interviews until the scenarios reached stability.

Conclusion

The research on the future surpasses the actual boundaries of today's siloed approach to research, focused just on the scope of one discipline. The future must be seen as a dynamic ecosystem requiring an interdisciplinary approach constituting in itself a new field of research, studying yesterday's and today's changes and trend patterns, aggregating and analysing them in respect to the possible tomorrows.

This area of research, regardless of being referred to variously as futuring, futures thinking, futuristic or futures studies or even as strategic foresight, will converge and integrate all the different approaches analysing the sources, patterns, causality of change and stability in order to develop what can be called a roadmap to possible futures. Not one, but several possible futures.

To address this, individuals and organizations must make a dramatic paradigm shift and assume that the only constant regarding the future is change and that there isn't just one future, but several feasible futures and approaches, evolving around an important premise – social and organizational life are only possible with permanent and intolerable uncertainty.

The past is just one, our knowledge and perception of the present is limited and the future has yet to unfold. So, to build personal and organizational relevant strategies and new business systems, today's researchers stress the importance of having a broad view on the future through the generation of alternative and plural futures, rather than focusing on just one monolithic future. Expert practitioners know the limitations of prediction and probability versus the creation of multi-perspective possible and/or preferable futures.

Futures are motivated by a passion for change and disruption, not by the everlasting projection of past trends. Futures are motivated by the desire to play an active role in transforming the world and being transformed along the process – the future is human at its core and the humanity of new business systems, along with the accompanying complex human nature, call for and deserve more accurate futures research.

The future can be changed. We cannot know the future with absolute certainty. Futures research must not attempt to predict precisely what will happen in the future; especially at moments like those we're living today with the blurring between every aspect of personal and business life and ecosystems. Nevertheless, futures research must not dismiss from their role of visionaries and inspirers the need to address the natural human insatiability for anticipating what lies ahead – presenting what may happen and, if not desirable, suggesting ways to change it and/or to spot opportunities and threats while there is still time to act. Because reacting afterwards is just not possible.

Regularly, corporate approaches to futures research are epistemologically and ideologically naïve and biased, assuming preconceived cultural ideologies and building on incremental changes to present situations, being unable to incorporate the many options and strategic insight routes for critical analysis and reconceptualization upon which lasting social innovations and disruptions may depend. Companies must adapt forecasting systems incorporating sense-and-respond models along with new strategic planning processes "armed" with new kinds of symbolic and methodological resources to create a new focus on strategic foresight.

Today's world is marked by volatility and more accurate futures research methods can (and will) be a very important competitive advantage through the generation of more plausible and partitioned future scenarios that, once analysed, will allow organizations and society to prepare for them and, in the process of predicting the future, constantly review and create that very future(s).

Marketers must evolve and look beyond techniques like trendspotting, embracing more robust and scientific research methods to go beyond personal beliefs and the glamour of trendy culture. Futures research shouldn't aspire to be fashionable, but a beacon of robustness comprising enough academic testing and validation when analysing possible how new trends have emerged from innovations, beliefs or actions that have the potential to grow and eventually go mainstream in the future.

Futures research is about human beings – they're drivers for change and the research must address and show the increased value for human beings in every trend regarding social, behavioural or technological change. Forecasts and trends are starting points for thinking seriously about the future in a rapidly changing world. Thinking processes are the essence of visionary wisdom.

Today's fast changing world is requiring much more than skills and knowledge; they're just not enough for a successful and prosperous life – vision and foresight is required. Knowledge can became quickly out-dated, but foresight enables companies and human beings to navigate change through a sense of the big picture and understanding of the trends and patterns shaping the future – because to see things not just as they are now, but how they could be is the essence of leadership.

Futures studies are not yet well established at the social level and the implementation of futures thinking lags well behind its conceptual and methodological development. Nevertheless the future is bright because futures tools and methodologies can be seen springing up in many instances and universities are developing initiatives regarding advanced futures discourse and implementation of foresight courses.

The future(s) is now. If you can predict it, you can influence and change it – drive it or be driven? Choose wisely.

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