Internet Marketing and Big Data Exploitation

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Dedicated to Annabel, Dillon, Luther, Lyn,
Miles and Wesley Chaston

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Preface

The initial impact of the Internet was to provide search engines that gave users greater access to information and radically altered purchasing behaviour in both B2B and B2C markets as a consequence of the move from terrestrial to online transactions. In the last few years, advances in Internet and technological convergence – most recently through the exploitation of big data made feasible through the advent of cloud computing, and applications to expand the use of mobile technology – have dramatically altered the way in which the online world is being utilised by organisations and consumers. Although e-commerce and online purchasing have continued to be increasingly important, the online world now has a much wider impact in terms of permitting new, more innovative ways of exploiting the technology to create new forms of competitiveness among both pure play online operations and terrestrially orientated organisations in both the private and public sector.

The purpose of this text is to introduce the important role of innovation as a strategy for exploiting the rapidly changing nature of an increasingly interconnected world. This is achieved by describing the changing strategic concepts which have accompanied advances in both the technologies and how organisations are exploiting these technologies. Further understanding of these concepts is provided by examining how the online world is being exploited by organisations in certain sectors of a modern economy, such as retailing and the delivery of public sector services.

Chapter 1 presents the perspective of the role of disruption and innovation in changing the fortunes of organisations, and how the online world has and will continue to act as a source of innovation and change. Chapter 2 examines the advent of big data and reviews how access to larger, real time data will create new opportunities to more effectively identify changing market needs and deliver customer satisfaction in an online world.

Chapter 3 reviews the processes whereby organisations are able to identify and assess future entrepreneurial opportunities in an online and increasingly interconnected world. Chapter 4 covers some of the technological change which has and continues to occur in relation to the use of innovation as a pathway for utilising the Internet and associated technologies to launch new products and services. Chapter 5 examines

the application of the resource-based view of the firm in the context of assessing the competences required to be a successful entrepreneurial organisation in an online world in relation to both product and organisational process innovation.

Chapter 6 covers the way in which the online world has caused organisations to revise or radically alter their approach to innovation to sustain ongoing performance, and reviews the alternative strategic positioning available to organisations seeking to sustain future performance through innovation. Chapter 7 reviews how new or revised strategies to achieve competitive advantage involve changes to one or more components of an organisation's marketing mix.

Chapter 8 presents the theoretical frameworks and applied solutions that can optimise the performance of an organisation's website(s). Chapters 9 and 10 review how online advertising, social media and mobile apps are influencing exploitation of innovation to create new or revised organisational strategies and operational philosophies.

Chapters 11–13 provide coverage of sector specific issues in retailing, service markets and the public sector in relation to how organisations in these various sectors are developing strategies designed to exploit the opportunities and defeat the threat posed by ongoing changes in an online world.

Chapter 14 introduces the issue of governance in an online world and how communication technologies are permitting greater access to both personal information and organisations' confidential data. The final chapter reviews some of the current new technologies under development and how these may provide opportunities for the innovative development of new products and services.

1
The Online World

Business models

The birth of an entirely new industry is usually the result of a visionary idea for a new product, service or industrial process. Evolving the idea into a viable commercial proposition will often involve solving significant scientific or technological problems. Zott and Amit (2007) noted that in the early years of a new industry there is only limited understanding of what market opportunities exist and how these might be exploited. Over time, as summarised in Figure 1.1, interaction between identified opportunities, the nature of the technology and organisational capability leads to the emergence of one or more new business models.

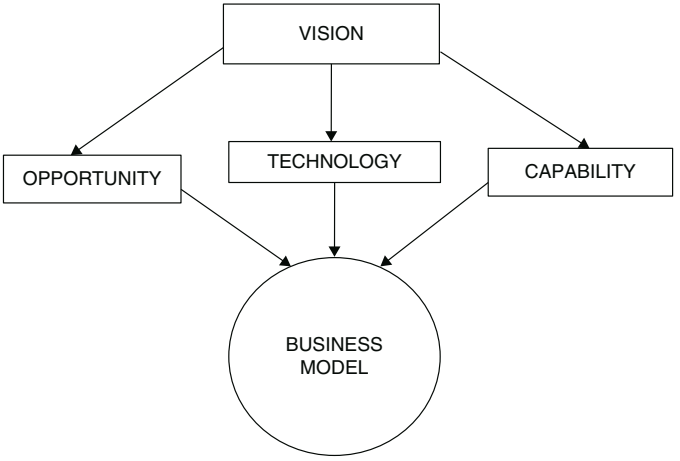

Figure 1.1 Business model emergence

Chesbrough (2007) proposed a business model which defines all of the activities associated with acquiring raw materials, executing internal processes to add value and the provision of output which is perceived as beneficial by customers. Tsai et al. (2011) suggested the elements which constitute a business model include:

1. A viable technology.
2. A value added proposition more able to satisfy customer needs.
3. A viable revenue flow.
4. Appropriate organisational structure.
5. Adequate resources.
6. An external environment supportive of the organisation's existence.

A key element in a successful business model is the existence of a strategy which defines the nature of the competitive advantage capable of delivering an organisation's performance objectives. Often, during the early years of a newly emerging industry, the entrepreneurs involved are unable to evolve strategy that defines the purpose of their commercial activities. This is because entrepreneurial visionary founders may be uncertain of the direction which the new industry will take. Clarity may only emerge over time as the result of an organisation learning from experience.

Kessler et al. (2012) proposed that new industries have a tendency to undergo change, especially in the early years following initial creation. This occurs as entrepreneurs gain experience, leading to the identification of new opportunities, advances in technology opening up new possibilities and acquisition of additional internal capabilities. The combined influence of these factors typically leads to the emergence of new or revised business models. The existence of a new industry may also begin to influence the nature of products, services or operational processes in other industrial sectors. This can result in the creation of revised or new business models by entrepreneurs working in these other sectors.

By the time first-mover organisations begin to consider developing a new or revised business model, it is very probable that the intensity of competition will have increased. Hence it can be expected that organisations will need to define new or revised strategies for enhancing, extending or even fundamentally redefining their business operations in the face of increasingly competitive market conditions. This is the scenario, for example, which has emerged in the world of online retailing as firms of all sizes entered the sector, fighting to create and sustain a viable cyber world business proposition (Quader, 2006).

Disruption

Where large firms have lost sales to a new market entrant, Christensen (1997) proposed that this outcome may be the result of 'disruptive innovation'. A key attribute of disruption is the development of a new unique business model, usually by an entrepreneur not well known within the industry, which appeals to the needs of customer groups in whom the dominant sector incumbents have exhibited little or no interest. An example of this type of disruption is Southwest Airlines, the highly successful American budget carrier. The company took market share from the larger airlines by offering lower cost air travel, which appealed to price orientated consumers, but was of limited interest to the business traveller market.

Christensen and Raynor (2011) proposed that there are two types of disruption. The first, 'Low-end' disruption, targets customers who do not need the higher level of product or service performance perceived as important by mainstream customers. Over time, as the low-end disruptor gains experience and acquires new competences and upgrades the benefit proposition – as was the case with economy airlines South West Airlines in the USA and Ryanair in Europe – the product or service offering may become increasingly appealing to mainstream market customers.

'High-end/new-market' disruption occurs when a new-market entrant targets customers who previously could not be served profitably by incumbent firms. An example of this scenario is the entrepreneur Steve Jobs' launch of the first Personal Computer by Apple at a time when the major computer firms such as IBM were focusing upon the supply of mainframe and microcomputers in Business-to-Business (B2B) markets.

Raynor (2011) posited successful disruption involves an 'enabling technology' to support the new business model, which will permit greater appeal of the product or service to a much larger group of customers. This occurs because an entrepreneurial organisation realises an opportunity exists to capture market share from less innovative competitors. He exemplified this concept using the case of Southwest Airlines, when the company started flying the Boeing 737-500 aircraft which reduced operating costs. This permitted the company to add routes of greater average length; thereby allowing the airline to become more attractive to business market travellers.

Ganguly et al. (2010) suggested emergence of a disruptive technology is usually a sequential process. Initially the technology may underperform relative to the available mainstream technology and by delivering

less value to existing customers, the new technology is usually ignored by mainstream market suppliers. The new technology is frequently cheaper and simpler, thereby permitting the new-market technology and further refinements in the business model to subsequently allow entry into more mainstream markets.

Predicting the market opportunity offered by a disruptive business model based upon a new technology is somewhat problematic. Ganguly et al. (2010) suggested a number of variables (or 'metrics') can provide some indication of the scale of the new opportunity. One is the size of the customer group which will be the source of early sales. Another is the stage of development which has been reached by existing technology. This metric is critical because once a technology has entered the maturity phase, there is often very little room for further improvements. This renders the existing mature technology vulnerable to competition, cannibalisation or being displaced by the emerging technology. Vulnerability will be further heightened where the key reason for adoption of a new technology is the belief that existing technology is unsuitable for performing functions which are beginning to be demanded by major customers. A third metric is the rate at which customers are likely to switch from an existing to a new technology.

A POTENTIAL FUTURE DISRUPTION

Case Aims: To illustrate how research in progress could have an immeasurable impact in relation to disrupting existing business models.

Biogerontechnology is comprised of a mix of potentially disruptive technologies which offer the benefits of providing entrepreneurial ways of improving healthcare and increasing the human life span by treating many of the costly and disabling conditions that humans experience in later life (Evans et al., 2009). There are a number of different technologies currently being researched. One approach is to extend lifespan by lifestyle modification and the development of drugs capable of altering metabolic processes. Another opportunity is the use of stem cells to support tissue repair and organ replacement. A third area is gene therapy, which involves the use of modified DNA to develop intra-cellular treatment solutions.

A significant proportion of the current research is being undertaken by researchers in the public sector and in small private start-up operations. Major questions still exist over which of these

technologies are likely to be commercially viable and thereby provide a source of market disruption. Should success occur, this will have a major influence on the future provision of healthcare, which in turn will impact organisations such as the major pharmaceutical firms and providers of care for the elderly.

Governments are struggling with finding ways of reducing public sector spending when the costs of providing healthcare services for the elderly are rising at an exponential rate. Should biogerontechnology deliver extended lifespans and compress morbidity, this could dramatically reduce expenditure on costly life-stage treatment of physical frailty and mental disability.

The Internet

The origins of the Internet can be traced back to the American Defense Advanced Research Projects Agency (DARPA) seeking ways of electronically exchanging data between organisations via the telephone. In the early years, the Internet was used by the scientific community for activities such as remote computing, file transfer and electronic mail. By the early 1990s, there was a dramatic growth in the number of organisations engaged in such activities. This necessitated an expansion in the infrastructure and data exchange capacity of the Internet and a number of commercial organisations entered the market, offering new capacity and support services (Weis, 2010).

Angeles and Nath (2001) noted that the Internet, by providing an accessible platform utilising a standard language protocol, permitted entrepreneurially orientated organisations to expand and upgrade data exchange activities. Internet-based data exchange led to major organisations such as the airlines recognising the benefits of offering their customers the facility of selecting and purchasing services online. There was also recognition of the potential the Internet offered retailers to move online. One of the earliest demonstrations of the new opportunity for this business model was provided by the launch of the online book store, Amazon, by the highly entrepreneurial Jeff Bezos.

Although online retailing received significant attention in both the academic press and the commercial media in the 1990s, Varano and Dunn (1999) noted the scale of Internet usage to support transactions was significantly much larger in B2B markets. Companies such as Cisco, a leading manufacturer of switching and control devices in the US,

moved from terrestrial to online sales and distribution. In some sectors, third-party portals were created to offer suppliers and sellers access to a greater number of transaction opportunities. Some of these portals permitted users to participate in online auctions, with the portal generating revenue by charging a commission on sales. The model was soon recognised as applicable in consumer markets, leading to the launch of auction portals such as eBay.

The Internet offers users instant access to vast quantities of information. The problem facing organisations wishing to generate a profit from information provision is the unwillingness of customers to pay a fee to access such services (Bleyen and Van Hove, 2010). In most mass markets, users have remained resistant to having to pay to access information, encouraged in large part by search engines such as Google and Yahoo, which continue to offer Internet users free access to a wealth of information. These companies have sustained a viable free access model by selling advertising space.

EXPLOITING INFORMATION

Case Aims: To illustrate how information can provide the basis for identifying new business opportunities.

Koli (2007) suggested there are two dimensions in the exploitation of information; namely utilising acquired information to identify new business opportunities, and the use of online information services to enhance service quality. He exemplified the nature of these two dimensions by reviewing organisational processes within the American parcel delivery service, UPS. Tracking and analysis of internal data concerning the logistics of service provision provided the company with the ability to calculate costs for each of the company's business activities. This revealed that it was cheaper to outsource the delivery of packages on rural routes to their competitor, the United States Postal Service (USPS). Nevertheless UPS still wanted to offer a seamless delivery service. Hence, although USPS handles the actual delivery, UPS still tracks an item whilst in the hands of the Postal Service.

Another opportunity identified by analysis of information revealed that UPS could deliver packages faster when the customer used the Internet to input shipment data directly into the company's

computer-based order entry system. By getting customers to undertake data entry, this reduced shipping times by at least 24 hours.

UPS can use the information on the company's computer system to offer an automated online product recall or re-routing services. This is feasible because the final destination of a delivery or current location of an item in the shipping cycle can immediately be made available to the customer. Experience in fixing customers' shipping problems led to recognition that most shipment errors occur because of incorrect or incomplete delivery information being provided by customers. In these instances UPS incurs added costs contacting customers to rectify the address error and the item sits around in the company's warehouse. Additionally some packages eventually have to be returned to the sender, resulting in the customer incurring additional costs and delivery delays. UPS realised that customers were willing for UPS to undertake the role of identifying and rectifying these errors. The UPS scanning system was modified to automatically identify incorrect addresses and the UPS computer operator is now offered a more accurate address on screen, which can be added as a correction to the package prior to entry into the delivery system.

Learning from failure

In the 1990s there was unprecedented enthusiasm for opportunities offered by the Internet, especially in relation to the launch of new firms operating in Business-to-Consumer (B2C) markets. Unfortunately, in many cases this enthusiasm was not accompanied by viable business models (Razi et al., 2004). Very few new ventures provided a positive return on the capital raised by their entrepreneurial founders and at the end of the 1990s the dotcom bubble finally burst (Valliere and Peterson, 2004).

Over the period 1995 to 2000, Internet-related new ventures in the US raised $36.3 million from their Initial Public Offerings (IPOs). By 2000, only 11 per cent of these ventures had sustained a traded share price exceeding their original share value at the time of market launch. The peak of euphoria over the dotcom industry led to a total market capitalisation value of $881 billion in 1999. When the bubble eventually burst, investors lost over $680 billion (Agarwal et al., 2001).

Many dotcom start-ups in B2C markets did not understand that failing to offer customers a superior value proposition which differentiates

the business from competitors can only result in offering a 'me too' benefit claim. In those cases, especially in those markets where successful terrestrial operations already existed, the only likely outcome was a price war. In his analysis of Internet failures, Porter (2001, p. 75) described this outcome as 'an inevitable race to the bottom'.

Rovenpor (2003) concluded that the founders of many Internet start-ups were 'techies' who lacked any real business experience. These individuals did not test the viability of their business models before initiating a full-scale market launch. They assumed that because financial institutions were willing to lend them money, they must have a viable idea. One revenue generation model was to offer a range of free services and assume that as visitor numbers rose, they would be able to sell advertising space on their websites. Unfortunately, visitor numbers remained low and hence there was no interest in the website from potential advertisers.

Another related problem was that some start-up entrepreneurs failed to appreciate the scale of marketing expenditure required to build customer awareness for the existence of their websites. Many soon discovered that attracting visitors required huge expenditure on promotional campaigns using terrestrial media such as television advertising. In most cases the cost of attracting customers greatly exceeded customer expenditure. In 1999 in the US, for example, it was estimated that a new Internet firm would need to spend on average $1100 per customer in order to attract the customer, but that on average the new customer would only purchase $400 of merchandise (Agarwal et al., 2001).

Korgaonkar and O'Leary (2008) noted that start-ups in the 1990s were often required to build their own websites and develop their own software to create viable back-office systems. The front-end costs of creating systems capable of supporting a national or international online business operation were extremely high. For those firms unable to support this level of expenditure, the outcome was poorly designed websites, inadequate download speeds causing customer dissatisfaction and inefficient back-office systems.

Another problem confronting many start-ups was that potential customers had already accumulated in-depth experience of purchasing from terrestrial outlets or mail order companies. These customers already had expectations over issues such as range of product, product availability, service quality and pricing. To fulfil these expectations pure play online retailers needed to create operational infrastructure – in areas such as procurement, inventory management and logistics skills – similar to that of their terrestrial counterparts (Chaston, 2012).

Pandya and Dholakia (2005) analysed the operational errors made by the early dotcom entrepreneurs as the basis for defining a generic business model required by organisations seeking to successfully exploit the Internet. As summarised in Figure 1.2, these authors proposed a successful online business model should be constituted of five components; namely a value proposition, appropriate organisational infrastructure, an online customer interface, superior product/service and viable revenue model.

Dubosson-Torbay et al. (2002) suggested the most critical component in a successful online business model is a superior value proposition of sufficient appeal that potential customers prefer the product or service offering over those available from either other online suppliers or terrestrial firms. This conclusion is based upon the perspective that a superior value proposition ensures the online organisation can achieve differentiation from competition.

Merely offering a superior online product or service can only be successful by ensuring there is an effective interface between the customer and the supplier. The interface provides information to assist the purchase decision, offers facilities whereby the customer can enter into a transaction with the supplier and, in the post-purchase phase, ensure the purchased product or service is delivered. The latter attribute demands the existence of an effective back-office system to support the logistics necessary to ensure accurate and on-time product or service delivery.

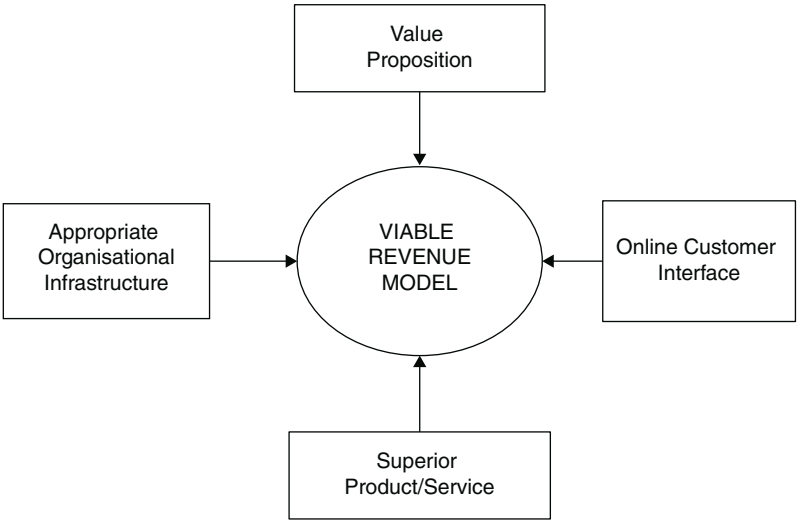

Figure 1.2 Online business model components

The combined interaction of a value proposition, appropriate organisational infrastructure and effective customer interface are all required in order to ensure the customer receives the product or service that is perceived as superior to that available from competition. Although this will lead to customer satisfaction, as identified in Figure 1.2, the interaction of these components also has to provide the supplier with a revenue model which delivers an adequate return on investment.

EARLY FAILURES

Case Aims: To illustrate that online operations are dependent upon having a business model capable of attracting a high level of customer demand.

Ernst Malmsten and Kajsa Leander's first Internet venture was the launch of an online Swedish bookstore (Stockport et al., 2001). After selling the business, Leander was keen to create Boo.com as the world's first trend-setting, global, multilingual online company selling the latest fashions to affluent young people. Their timing was perfect because the New York financial sector was desperate to invest in new online ventures. Within less than a year, the founders of Boo.com raised almost $130 million.

Assuming a net profit of 10 per cent on sales to break even, Boo.com would need to generate annual sales in the region of $1 billion. Successful execution of the launch strategy required development of the software systems capable of managing a global-scale online retail operation and a promotional campaign to achieve adequate consumer awareness of the company. Lacking in-house expertise, Malmsten and Leander hired the Swedish company Ericsson to undertake systems development. The firm had no previous experience in this area of computing. By December 1998, Ericsson were making slow progress on systems integration. Malmsten decided the company would take over the project themselves and Leander commenced spending on her $42 million marketing budget.

The company's financial backers were becoming increasingly concerned at the rate the company was burning through available funds. Goldman Sachs was persuaded to take a stake in Boo.com.

On 2 November 1999, Leander announce the launch of Boo.com. Operating problems emerged immediately because most consumers lacked the high speed computers and the latest web browser required to access and rapidly download information. Boo.com was forced to

obtain another injection of capital. By January 2000, Boo.com was attracting 36,381 visitors per day, generating a weekly sales rate in the region of $600,000 at a point when Boo.com's weekly expenditure was over $1 million. It became obvious the company would not last long enough to execute the IPO which could bring in more cash. JP Morgan resigned as Boo.com's advisor and other investors were only willing to inject more capital if the company raised an additional $25 million from other sources. Unable to fulfil this requirement, on 17 May 2000 the Board voted to put the company into liquidation.

Internet evolution

Major technology shifts in the 1980s included the introduction of PCs and the development of user-friendly software by firms such as Microsoft. These advances, coupled with the expansion of the Internet in the 1990s, were forecasted to revolutionise both the world of business and consumer lifestyles. Tyson (1998) concluded the benefits of lower-cost computing and related technologies would be of little benefit until further technological advances permitted the world to enter the 'Intelligence Age'. Kalakota and Whinston (1996) had previously suggested this outcome was unlikely until advances in data transmission occurred and download speeds dramatically increased. This first step in relation to these two variables occurred with the development of technology that permitted the expansion of online bandwidth and telecoms upgrading their data distribution infrastructure.

Improved download speeds did not provide the complete solution which would permit the arrival of Tyson's Age of Intelligence. For this to occur, Soliman and Youssef (2003) posited there was a requirement for additional technological advances including:

1. Convergence of electronic devices to permit all of these to be linked to the Internet.
2. Advances in telecoms technology and development of new types of microchip and operating systems to permit the introduction of remote access devices, such as smartphones and tablet computers.
3. The ability to link together digital data acquisition systems, such as remote sensors without hardwired connections.
4. Access to low-cost data storage and analysis capability through the development of cloud computing.

5. More sophisticated data analysis through access to low-cost, advanced statistical analysis software.
6. The automation of decision-making by exploiting advances in Artificial Intelligence (AI) systems.

All of these advances are now in place. This outcome is seen by industry experts and futurists as the basis of the next economic upwave, which has been labelled as the 'Smart Age' (Anon., 2010). This new era offers virtually every organisation significant new marketing opportunities. Firms seeking to survive in the face of increased competition in global markets can develop core competences required in the smart technology age to generate information in a form which provides the basis for creating new forms of competitive advantage. The opportunities for exploiting smart technology are massive. Effective exploitation of new and existing information can lead to the generation of new solutions to world meta problems such as the energy crisis, global warming, population ageing, stabilising of healthcare costs and reduction in the costs of delivering welfare state services.

Assessing the implications of the smart upwave in terms of offering new ways of exploiting information, Bughin et al. (2010, p. 28) concluded:

> The pace of technology and business change will only accelerate, and the impact of the trends below will broaden and deepen. For some organisations, they will unlock significant competitive advantages; for others, dealing with the disruption they bring will be a major challenge.

Chaston (2012) proposed this latest upwave is fundamentally very different from earlier economic change because information has moved from being an antecedent in the creation of new industries to now occupying a centre-stage role, being the core benefit to be made available to markets.

ONE OF THE FIRST NEW WAVERS

Case Aims: To illustrate how information provision has led to the creation of one of the world's most successful Internet businesses.

In the early 1990s, two of the world's potentially successful entrepreneurs whilst still students at Stanford University, Jerry

Yang and David Filo, began to create their own list of favourite websites, which they organised into a hierarchical directory of categories. Encouragement from other techies at Stanford stimulated these two individuals to start visiting and categorising in the region of a 1000 new sites per day. This activity eventually led them to create Yahoo, which was one of the earliest entrants into the world of Internet search engines. Early success caused the company to decide to focus upon dominating the search engine business by evolving an all-purpose portal for Internet users. This strategy can be contrasted with at that time a much less known company, Google, run by Sergei Brin and Larry Page. They decided the future was to specialise in creating the world's most effective search engine.

The key reason for Google's success was that Sergei Brin and Larry Page recognised something that few others at the time seemed to comprehend; namely, in an online world, components such as computers, microchips, user interfaces and Internet services would eventually become commodities (Smith, 2010). Under these circumstances the only remaining source of competitive advantage was to focus upon achieving superiority in the acquisition, management and provision of information. To achieve this outcome, while the competition were seeking to find ways of maximising immediate revenue, Google focused upon developing and making available free online tools to assist users' information acquisition activities.

The company continues to engage in entrepreneurial innovation to exploit expertise in managing large volumes of data by reinvesting funds from the company's cash cow of advertising revenue into projects such as the driverless car, Google glasses, cloud processing and, more recently, smart robots.

Big data

The world of online searching and purchasing is generating huge volumes of data, which when captured and analysed provide opportunities for the marketer to more effectively understand and satisfy the needs of potential and existing customers. This vast pool of information has become known in recent years as 'big data'.

In terms of understanding what is meant by big data and the management of this resource, Nunan and Di Domenico (2013) proposed there is the need to examine the following three perspectives:

1. Managing the technology problems associated with storing, securing and analysing the ever-increasing volumes of data being gathered by organisations.
2. The commercial value that can be added to organisations through generating more effective insights from this data.
3. Consideration of the wider societal impacts of big data, implications for individual privacy and the effect of regulations and guidelines for ethical use of the data.

Big data refers to the technical issues concerning the large volumes of data being created (Jacobs 2009). Examples that illustrate the growth in data are (i) 90 per cent of the world's entire digital data was produced between 2007 and 2009 (IBM, 2011) and (ii) the sum of all information ever produced by humans by 1999 (estimated at 16 trillion megabytes) will be the same as generated every nine weeks by the world's largest telescope, the Square Kilometre Array (Redfern, 2011). As data volumes have increased, the cost of storing this information has been massively reduced.

Two other factors, 'velocity' and 'variety', are critical in the effective exploitation of big data (IBM, 2011). Velocity refers to the issues associated with accessing stored data sufficiently rapidly for the data to be useful. Variety refers to the types of information being stored. In the past, data stores tended to be highly structured 'silos' and linking these together to identify relationships was extremely difficult. Much of today's data is in an unstructured form from sources such as social media, audio or visual entertainment, electronically distributed organisational data, memoranda, web pages and online interaction between customers and suppliers (Kuechler, 2007).

Ongoing evolution

Battles between terrestrial retailers adopting a clicks and mortar business model, in response to the online threat posed by pure play firms such as Amazon, led academics and industry observers to emphasise the importance of the e-commerce component of the online world. The reality, however, is that in considering the Internet as an entirety, e-commerce is but only one sector within a rapidly growing, very diverse and huge

information exploitation industry. This industry can be considered as consisting of the following four different but interlinked organisational types (Ghorbani, 2004):

1. Primary Internet Services Delivery (or iSDs), whose role involves activities such as offering online transactions and search engines.
2. Secondary Internet Services Users (or iSUs), whose primary business is engaging in online activities to enhance customer satisfaction or organisations' internal business operations.
3. Internet Delivery Systems (or iDSs), which supply software and hardware which permit users to utilise the World Wide Web.
4. Internet Access Devices (or iADs), who manufacture products which permit access to the Internet, such as PCs, laptops, tablets and smartphones.

As with any new technology, different entrepreneurs will enjoy greater prominence or commercial success than others. For example, in the computer industry mainframe manufacturers were overtaken first by mini-computers and then the PC. In turn, excess production capacity and intense price competition in the PC industry permitted software firms such as Microsoft and Oracle to gain greater prominence in terms of revenue generation and profitability. In the case of the Internet, although over the past decade iSD organisations have enjoyed a period of strong business growth, most recently in terms of profitability and wealth generation these firms have been overtaken by iAD producers launching new devices such as tablets and smartphones, which offer mobile Internet access. In 2012, the highest level of success enjoyed by an iAD producer was the Apple Corporation, with the company generating revenue from the iPod, iPad and iPhone (Evens, 2010).

Another example of the changing nature of the Internet in terms of the number of users and possible wealth generation capacity is the increasing importance of social networking sites. Possibly the most successful is Facebook. The company's IPO in 2012 was forecasted to result in a valuation in excess of $100 billion. However, similar to the situation faced by many of the early Internet start-ups in the 1990s, the question exists over whether social network sites, which offer free access to users, are able to exploit the sale of advertising space as the basis of creating a viable revenue model (Cusumano, 2012). Concerns over this question, and problems over processing share orders by the Nasdaq on the first day of the IPO, subsequently caused Facebook shares to lose

approximately 25 per cent of total value within only a few days of the company's arrival on Wall Street.

HARNESSING ONLINE OPPORTUNITIES

Case Aims: To illustrate how one firm is revising strategy in response to the opportunities offered by an online world.

Bryant (2012) concluded that the changing nature of the online world requires most firms to examine how a more entrepreneurial orientation can lead to the creation of very different future strategies. An example is provided by the German Bosch Group, a leading global supplier of technology and technical advisory services. The company strategy is to offer superior products through a strong commitment to new product development and the exploitation of leading-edge technologies. Each year the company spends in the region of €4 billion on R&D and applies for some 4100 patents worldwide, representing an average of 15 new patents per day.

Bosch recognised that the Internet offers potential opportunities for creating new revenue streams and business models, deciding that in developing any new products, these must have the capability to be connected to both the virtual and physical worlds. Whilst maintaining a pivotal position in the world car industry through the supply of products such as anti-lock brakes and diesel injection pumps, the company is also involved in household appliances, solar energy and packaging systems.

Increased exploitation of the Internet will involve expanding the company's capabilities in software engineering and electronics. Currently, 25 per cent of R&D expenditure is allocated to software development. By 2015, the plan is to massively expand software development across areas such as electro-mobility, energy efficiency and energy efficient building systems. To achieve this goal, a priority is to ensure that all of the company products are IP-enabled in order to permit connection to the Internet. The company plans to use cloud computing to acquire real-time data that can permit enhanced performance of both the company's products and its services. In the home appliance market, the company is already developing devices for those consumers willing to pay a premium price for products which switch on and off automatically to exploit times when electricity is less expensive.

Assessing futures

The potential social and economic impact of the Internet prompted Bill Gates, the entrepreneurial founder of Microsoft (Gates et al., 1995, p. 9), to observe that 'the information highway will transform our culture just as dramatically as Gutenberg's press did in the Middle Ages.' While both the printing press and the Internet influenced the spread of knowledge and information, it could be argued that unlike the printing press, where after hundreds of years of development the technology is now well understood, the Internet still offers as yet unexploited opportunities to have further dramatic impact on the global economy. This latter perspective is based upon the fact that with mobile devices expanding the acquisition, distribution and exploitation of data more opportunities are likely to emerge. As a consequence, all organisations are confronted with new opportunities to upgrade or totally revise their business models. In commenting upon this situation, Berman (2012, p. 16), proposed that in redefining business models to exploit the Internet, organisations should focus upon 'reshaping customer value propositions and utilising digital technologies for greater customer interaction and collaboration'.

Sales of smartphones and tablets already exceed that of PCs. Downloads of apps for use on mobile devices are creating new ways of supporting interactions between individuals and organisations. Customers are increasingly relying upon online social networks when reaching a purchase decision, exchanging positive experiences by sending text and visual materials to others within their social network or communicating to a wider audience via sites such as YouTube.

Chiem et al. (2010) opined the challenge is how to exploit the availability of real-time market information to assess buyer preferences and determine how this knowledge can provide new ways of delivering customer satisfaction. Achieving this goal will vary between industry sectors and between organisations within specific sectors. The focus may remain on the more effective provision of information but in some situations, organisations may be able to create revenue flows from the provision of new, as yet unidentified, online services.

The use of information to enhance customer experience has always been a fundamental aspect of effective B2C marketing. The benefits of using information to enhance the customer experience is now more widely accepted across B2B sectors, following the development of more powerful 'data mining' systems by companies such as SAP, Oracle, Siebel, Sage and Microsoft. Xu and Walton (2005) noted that the advent

of the Internet provides users of these data mining systems with a wealth of real-time customer purchase, through which they can acquire a greater understanding of buyer behaviour. These in-depth insights permit the customisation of products or services, enhancement of marketing communications and more accurate targeting of promotional messages. Real-time tracking of purchase data allows the identification of emerging trends, providing the basis for predicting possible changes in future purchase decisions by both existing and potential customers.

Stone (2009) suggested access to real-time data concerning customer behaviour permits the following ways for the entrepreneur to exploit acquired knowledge:

1. Redefinition of existing views about customers and future intent.
2. Using data analysis techniques to generate additional understanding of customer attitudes, behaviour and relationships.
3. Moving channel management to a higher level by exploiting the different media available for communicating to customers.
4. Building responsive information systems capable of exploiting data mining to constantly update customer profiles and channel usage.

The ultimate aim for most organisations should be the redesigning of their business models to ensure that utilisation of the Internet can result in optimising every aspect of the customer experience. To fulfil this aim, as summarised in Figure 1.3, it is proposed that the majority of organisations will need to define an Internet Strategy (or 'i-Strategy') to provide the basis for evolving plans to effectively exploit the Internet's impact on their future operations.

The opportunities for identifying and evolving new online opportunities to sustain business revenue can be illustrated by the activities of Amazon over time (Figure 1.4). The organisation's initial marketing strategy in the 1990s was to maximise sales of books via their online store. Expansion of this proposition involved attracting new customers by offering other products such as DVDs and music downloads. More recently, to exploit the opportunities associated with the mobile device market, the company launched their Kindle product which permits the downloading of e-books and, most recently, the Amazon smartphone. In terms of diversification, the company has moved into the provision of back-office services for other online retailers and expanded the scale of this proposition by offering cloud computing systems.

The primary purpose of Chapter 1 is to review the evolution of marketing management philosophy and to describe how the Internet, when

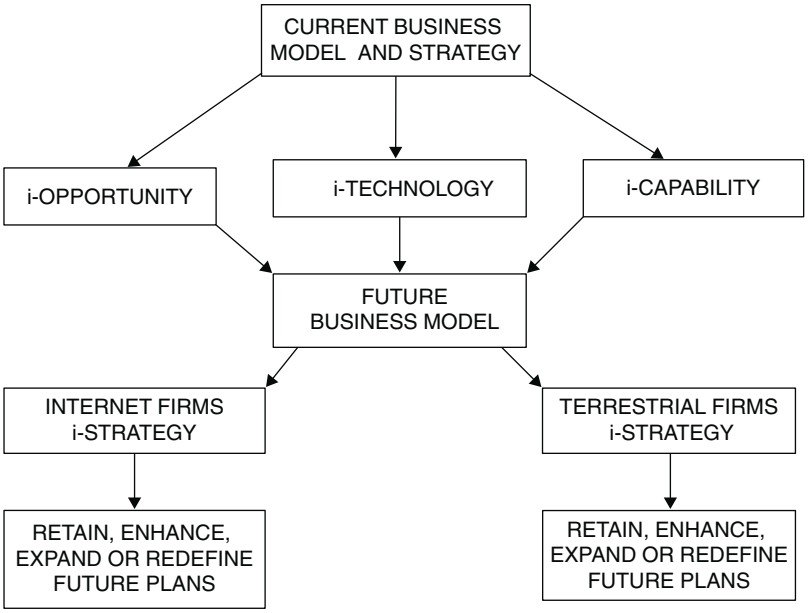

Figure 1.3 Evolving models and i-Strategies

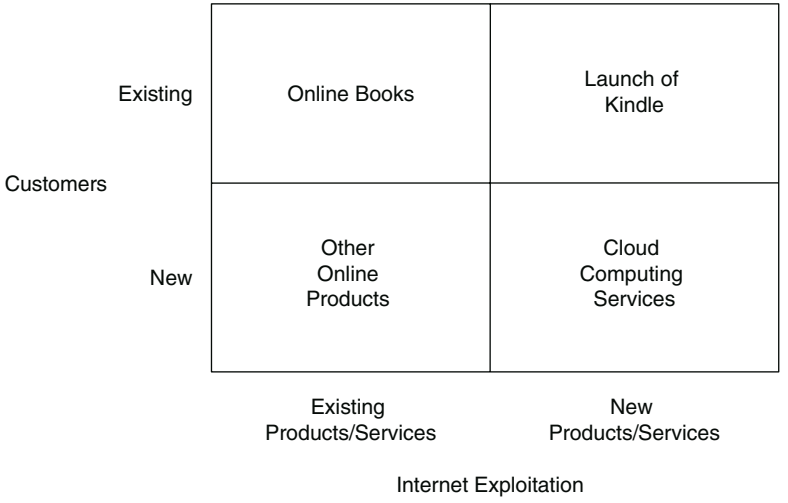

Figure 1.4 Amazon's strategic direction matrix

coupled with the world of big data, has evolved to the point where organisations are able to develop more innovative business models and marketing strategies. The purpose of the balance of this text is to revisit marketing management theory in relation to how ongoing application of innovative thinking in the online world is likely to impact organisations. This objective will be achieved by examining how convergence in Internet, advances in computing technology and developments in mobile communications technologies will permit organisations to develop i-Strategies, offering opportunities to differentiate the organisation through the development of new or existing products, services or operational processes to ensure organisational survival in an increasingly interconnected digital world.

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2
Big Data and Analytics

Information explosion

Marketing has long relied upon using data to generate understanding of customer needs. In recent years the effective utilisation of all data sources has become an increasingly important organisational competence. This is because the generation and exploitation of new knowledge is fundamental to sustaining competitive advantage (Bughin et al., 2010).

Exploitation of data represents both a challenge and an opportunity. The challenge is how an organisation can manage all of the data that is generated. Managing inbound and outbound transaction data is a relatively simple process. However, the complexity of data management has been infinitely increased by the advent of the Internet and mobile communications technology. These generate huge volumes of data by online customers, third parties, e-mails, blogs and now, increasingly, sensors providing suppliers with real-time data on products being used by customers.

Valery (2013) noted the role of sensors connecting suppliers to customers via the Internet, known as the 'internet of things'. In 2013, this had for the first time exceeded 1 billion devices in use. It is estimated by 2020 over 20 billion 'things' will be connected to the Internet and continue to double in size every five years. Factors contributing to this growth include the declining cost of sensors, expanding Internet bandwidth, wireless connectivity and the advent of the 'cloud', which has dramatically reduced the cost of storing and accessing digital information.

This massive upswing in acquiring and analysing available information has become known as 'big data'. Franks (2012) noted that there

exists a number of definitions of what constitutes big data. Gobble (2013) proposed that data can be considered 'big' when the volume is such that conventional systems no longer have sufficient processing capacity. She commented that big does not just refer to size, but because there is too much data, the velocity of data generation is too fast and may not be structured in a form that can be handled by the recipient's in-house systems.

In reviewing the implications of big data, Johnson (2012, p. 50) concluded:

> Success in the data-driven economy will require as much acumen in harnessing what wasn't known or anticipated, as was rewarded historically for those able to optimise what was known and could be acted on to deliver on market expectations.

Johnson opined the expanding nature of information networks offers the opportunity to create new business models, improve business processes, reduce costs and lower risk. In her view, the ability of organisations to convert information into actionable knowledge requires a focus upon defining viable outcomes. This can only occur where employees have the competences to apply insight and adopt a holistic view encompassing both the organisation and the market systems in which the organisation operates.

As a data-centric approach, big data and analytics (BD&A) has long existed in the field of database management, relying on various data collection, extraction and analysis technologies (Turban et al., 2008). Hsinchun and Chiang (2012) opined many current BD&A technologies and applications currently in use can be considered as 'BD&A1.0'. This is because data are mostly structured, collected through various legacy systems, and often stored in relational database management systems (RDBMS). The analytical techniques used in these systems draw upon statistical tools developed in the 1970s and upgraded during the evolution of data mining techniques during the 1980s. Commercially available analytical software technologies have been available for some time from leading IT vendors such as Microsoft, IBM, Oracle and SAP.

The advent of the Internet has led to further evolution of data analysis techniques to permit the generation of analytics based upon real-time data from customers' use of websites, online purchasing and involvement in online social media such as forums, online groups,

web blogs, social networking sites and virtual world social games. This change can be labelled as 'BD&A2.0' systems. Hsinchun and Chiang concluded there is a growing need to integrate mature BD&A1.0 into 2.0 systems using scalable techniques in areas such as text mining, web mining, social network analysis and spatial–temporal analysis. The list of possible technologies that will become increasingly important in the generation of actionable analytics include association rule mining, database segmentation, clustering, anomaly detection, graph mining, social network mining, text mining, and sentiment and affect analysis.

Business analytics covers a number of information management processes. Gartner (2012) proposed these could be divided into the following types:

1. Descriptive analytics describing what has occurred.
2. Diagnostic analytics evaluating why something happened to determine the influencing variables.
3. Predictive analytics seeking to determine potential outcomes using statistical or data mining tools.
4. Prescriptive analytics permitting examination of alternative strategies and tactics.

The role of analytics across different sectors and management functions include (Banerjee et al., 2013):

1. Retailers using data and analytics to manage both day-to-day and longer term customer strategies using real time data.
2. Banks using analytics to segment customers to assess risk and offer customised services.
3. Credit card companies using analytics to protect customers and themselves from fraud.
4. Large software firms which handle and manage operational data for their B2B customers undertaking tasks such as enhancing supply chains, controlling material expenditures and assessing sales forecast accuracy.
5. Various service industry sectors (such as airline industries and car rental companies) maximising revenue and optimising utilisation of capacity by integrating demand-side and supply-side management decisions.
6. Manufacturers seeking to optimise activities such as procurement, inventory planning, inputs sourcing and production scheduling.

To maximise the benefits of utilising business analytics Banerjee et al. opined the three key factors are input data, processing capability and business acumen. In terms of input data, these should be high quality, standardised and contain few information gaps. Processing capability refers to data management, statistical and computational abilities. Business acumen is the ability to utilise data to generate new insights and formulate superior decisions. This requires a mix of data literacy and creative business skills which develop over time as a consequence of exposure to various business problems and operational scenarios.

In relation to the issue of insight, organisations have traditionally viewed accurate data as a relatively scarce resource which requires making assumptions when data gaps are encountered. Big data changes this perspective because the increasing volume of data becoming available can be historic, current or predictive, which together minimises data gaps. This data requires understanding in order to extract knowledge relevant to optimising future performance. Johnson proposed this can only occur when the organisation focuses upon the outcome of what performance goals are critical and determining what new knowledge can be extracted from the available data to achieve these goals.

The high cost associated with managing big data does mean organisations need to ensure the most appropriate analytics are being generated which permit knowledge creation that can underpin organisational learning relevant to the organisation's supply chain and market environment. Only then can data become a valuable asset capable of transformation into beneficial, actionable outcomes. This may lead to the disruption of existing business models which in turn leads to new market opportunities. Given big data can reduce information data gaps, there is also the probability that new knowledge being acquired will increase organisations' abilities to more accurately predict future events.

Winners in this new environment will be those who have the skills to use analytics to improve business performance and exploit new opportunities. Correctly interpreted data analytics can enhance the clarity of business decisions and enhance future business outcomes. It is also probable that organisations will need to evolve and change to ensure greater understanding of how changing internal and external circumstances can be rapidly converted into actionable decisions.

UNDERSTANDING OPPORTUNITIES

Case Aims: To illustrate the importance of understanding how to effectively exploit a big data orientation.

The McKinsey Consulting Group undertook a study to gain further understanding of how firms are adopting and implementing big data strategies (Bughin et al., 2010). In the case of a major retailer, they concluded the company was very focused on internal data such as product returns, warranties and customer complaints, which were recognised as containing a wealth of information about consumer habits and preferences. The identified weakness in this use of big data was that none of the information was integrated with customer identification data or sufficiently standardised to share internally or with supply chain members. As a consequence, data was rarely analysed for marketing insights and could not be used to assist sales representatives at the customer interface.

The retailer's IT team recognised a need to create an information grid that would provide for a range of data-sharing and analysis across the company. Senior management decided against a company-wide initiative because this clashed with the prevailing culture of delegated innovation occurring at the business unit level. A project was initiated to obtain business units' perspectives of key projects for progression. The first project pursued was a redesign of the fragmented customer-relationship-management (CRM) system and the creation of a single data pool for use across the organisation. This was implemented by providing salespeople with tablet computers to provide real-time access to inventory data, customer profiles and product information. A second initiative was to hire online developers to create virtual storefronts for third-party websites.

The McKinsey study included discussions with a European telecoms firm on how to exploit data generated by online conversations with individuals and organisations. The company recognised the importance of the data but lacked econometric and analytical skills to generate usable analytics. A cross-functional executive committee supervised a new analytics team to ensure big data activities were aligned with the company's strategy.

Prior to implementing new activities there is a need to determine how revised data utilisation strategies can be incorporated into the organisation's overall strategy and to determine what new resources

will be required. One case reviewed by Bughin et al. revealed the CEO had assessed how a big data orientation could influence the company's sales and marketing function. He eventually decided the scale of change was too major and instead implemented a smaller, phased development to improve the organisation's big data exploitation capabilities.

Bughin et al. (2010, pg. 109) commented that:

> Too few leaders fully understand big data's potential in their businesses, the data assets and liabilities of those businesses, or the strategic choices they must make to start exploiting big data. By focusing on these issues, senior executives can help their organizations build a data-driven competitive edge.

Early analytics

Marketing involves understanding and satisfying the needs of customers more effectively than the competition. Major FMCGs used market research to support mass marketing strategies in the 1950s. This revealed customer needs are heterogeneous, leading to the use of market research to identify need variance through a process known as 'market segmentation'. The aim was to generate analytics for developing segmentation strategies which permitted tailoring of marketing activities to match customer characteristics with organisational capability (Kotler, 2003).

For an identified segment to be of use, there is the requirement that the segment is identifiable, substantial, accessible, responsive and actionable (Wedel and Kamahura, 2000). The advantages of customer segmentation include (a) facilitation of pattern recognition to reveal hidden relationships and (b) developing marketing and promotional strategies that are based upon understanding of different customer segments. Selection of early segmentation techniques was determined by the ease with which data could be acquired. This resulted in segmentation strategies based upon:

1. Geographic criteria based upon location.
2. Economic criteria based upon product/service usage.
3. Socio-demographics using criteria such as age, sex, income, education, occupation and social class.

An identified drawback to what is now known as a 'small data' segmentation is that the variables often acted as surrogates which did not accurately define customer needs. As a consequence, more sophisticated analysis techniques were developed using factors such as psychographics, culture, lifestyle and personality. These approaches based on multiple dimensions are more useful and more flexible when utilised in planning marketing strategies and implementing marketing tactics (Neal and Wurst, 2001). The approach also permits activities such as the three-dimensional segmentation scheme in which each segmentation is based upon different variables. Thus, for example, an X-axis might be based upon benefit segmentation, a Y-axis on buyers' perceived acceptable price range and a Z-axis representing customer priorities.

The rising popularity of relationship marketing, whereby individualisation is used rather than grouping customers together, has raised questions about the ongoing validity of segmentation-based marketing (Coviello et al., 2002). In theory, organisations can exploit Customer Relationship Management (CRM) technology to identify specific customers, understand their needs, predict their behaviour and develop tailored propositions more relevant to their requirements. However, researchers such as Rigby et al. (2002) and Boulding et al. (2005) have found CRM projects often fail to deliver the expected benefits. This would suggest that CRM should not replace segmentation. Instead segmentation can assist in enhancing effective strategies in relationship orientated markets whilst remaining very important in transactional markets.

Bailey et al. (2009) expressed the view that academic segmentation theory needs to evolve into a more actionable form for use in the real world. The researchers examined the strategic and functional role of segmentation in the UK companies in relation to (i) market predictions, (ii) customer segments, (iii) need and opportunity-focused analytics and (iv) customer value analytics. All the firms considered market predictions based upon data acquisition and analysis to be increasingly important as competition intensifies, customer demand shifts and cost pressures require greater attention to risk assessment prior to investing in new capital assets. These companies use segmentation to group together both existing and potential customers, although there was variation in the methodologies utilised. Some remain wedded to the more traditional approach based upon geography or socio-demographics. Those which have adopted more sophisticated approaches, such as assessing needs, behaviour or lifestyle, admitted difficulties had been encountered in translating these more advanced techniques into actionable strategies.

Bailey et al. concluded that in an increasingly competitive world organisations must develop a common understanding of what is customer insight, how insight should be used throughout their organisation in order to be linked with market segmentation and CRM. They believe customer segments using propensity modelling data derived from CRM systems represent the most likely approach for predicting customer needs for specific products, actioning marketing programmes in identified segments to retain customers and establishing communications platforms for optimising customer interactions.

SEGMENTATION IN ACTION (Bailey et al., 2009)

Case Aims: To illustrate the approaches being adopted by major companies as technology has permitted large scale data acquisition and data analysis.

Barclays Bank

In the past, Barclays has generated attitudinal profiles, but encountered problems attributing those profiles back to the customer base; thereby allowing customers to be offered different services. Problem resolution has involved adopting a hybrid segmentation model, incorporating attitudinal profiles and the following four types of segmentation:

1. Business type (personal, premier, private, small business).
2. Operational segmentation by age and wealth.
3. Attitudinal segmentation.
4. Executional segmentation based on operationalising triggers, events and propensity models.

The bank regards the executional segmentation category as increasingly important because this focuses on individual customer behaviour in relation to services offered.

For example, should a late payment fee be charged or a significant credit emerge in a customer's account, this might indicate that the customer's needs have changed in some way. Similarly, a customer with a direct debit for home insurance with another provider might then become a target for Barclays' insurance products.

Barclays combines internal transactional data from customer accounts and credit cards with external data sources, to provide a much richer picture of customers' lifestyles, finances, careers,

spending habits and travel. Propensity models are utilised to predict the customers' likelihood of responding to particular offers involving use of an optimisation engine to determine what offer to present. The engine takes into account a customer's values and behaviour so that each offer can be personalised.

British Telecommunications

BT's Major Customers Division, part of the largest telecommunications provider in the UK by market share, uses three means of defining customer segments as follows:

1. By value based upon using tiers labelled A, B and C, which take into account current and potential value.
2. By industry sector.
3. By business needs for telecommunications.

The company is using segmentation not only to determine *what* to sell, but also *how* to sell. The account teams use a Siebel CRM system to view a matrix of what they have sold and what promotional campaigns have directed to specific customers. This permits automated identification of potential events and triggers, such as when a contract is due for renewal.

Cisco

Traditionally, the company has segmented customers by geography and size of company, but more recently has introduced technology lifecycle and purchasing behaviour segmentation. This latter approach provides understanding of the likely status for adopting new technologies. Having identified future needs of both potential and existing customers, sales staff can then more accurately target their promotional activities. Within the lifecycle segmentation approach, Cisco can identify events and triggers likely to influence technology purchases. These triggers are categorised as (i) inherent and known, (ii) inherent but unknown and (iii) created.

O2

O2 is a UK-based mobile telecommunications provider which traditionally has segmented by value, industry sector, needs and behaviour. Value measures are used to determine the highest value

customers, particularly in consumer markets. Targeting industry sectors was seen as more appropriate in B2B situations because of the requirement to offer bespoke solutions. Segments are created by analysing the behaviour of existing customers combined with data from external sources such as market research firms.

The segmentation strategy was used to guide the new customer acquisition process rather than to define segments amongst existing customers. This orientation has now changed with greater emphasis on analysis directed towards implementing a one-to-one marketing model. O2 uses predictive data mining software which permits very rapid analysis of very large customer data sets. The system uses multiple propensity models to predict each customer's probability of purchase, ceasing to use a product or defecting to a competitor.

Purchasing information

In the pre-Internet world, a long established concept utilised in promotional planning was the role of information as the customer moves through the five-phase process of (i) need recognition, (ii) information search, (iii) information evaluation, (iv) purchase decision and (v) post-purchase evaluation. As illustrated in Figure 2.1, two sources of information are utilised by customers. Internal information is provided by sources such as family or friends, and in B2B markets, work colleagues and trade associations. External information is provided mainly by the supplier with provision primarily reliant upon promotional activities such as personal selling, advertising and merchandising. Most customers prefer to rely upon internal information. This is considered more trustworthy than that provided in promotional messages. Most organisations recognise this situation and work very hard to ensure customers are satisfied, thereby leading to recommendations being made to potential new customers via word-of-mouth (WOM) advertising.

Given the high costs associated with supporting a sales force in a B2B market, or television advertising in a B2C market, organisations use various analytics in an attempt to assess the effectiveness of their promotional expenditure. As shown in Figure 2.2 there are numerous points at which information can influence customer beliefs and attitudes and hence developing an effective set of cost effective analytics is not an easy process. An added complication is the degree to which an

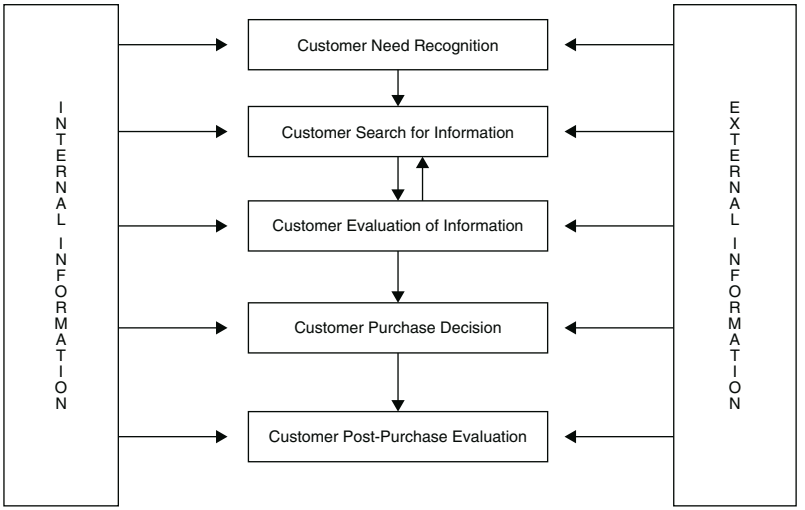

Figure 2.1 Five-phase purchase process model

organisation can accurately relate information provision to a specific outcome. For example although the organisation can review the number of sales calls in relation to orders received to assess personal selling, it is much more difficult to determine a specific relationship between advertising expenditure and sales. This is because where indirect promotional activity such as advertising or sales promotions are used, these are presented in a complex environment within which accurately determining the impact of other variables such as competitor activity is virtually impossible.

The advent of the Internet offering customers a new channel through which to acquire information, interact with a supplier and place a purchase has added a whole new level of complexity when generating analytics through which to assess information provision effectiveness. This has resulted in firms beginning to use analytical ratios of the type shown in Figure 2.3 to rapidly gain insights into online customer behaviour and evolve more effective online promotional campaigns (Ziliani, 2006).

As proposed in Figure 2.3, the advent of people utilising the Internet to socialise with each other via their PC or a mobile device has created a whole new channel for internal information flows as individuals and organisations progress through the five-phase purchase process.

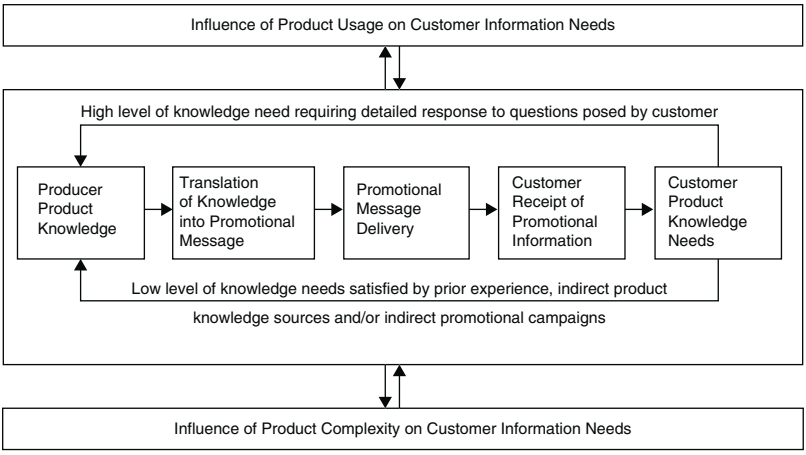

Figure 2.2 Information needs and information flows

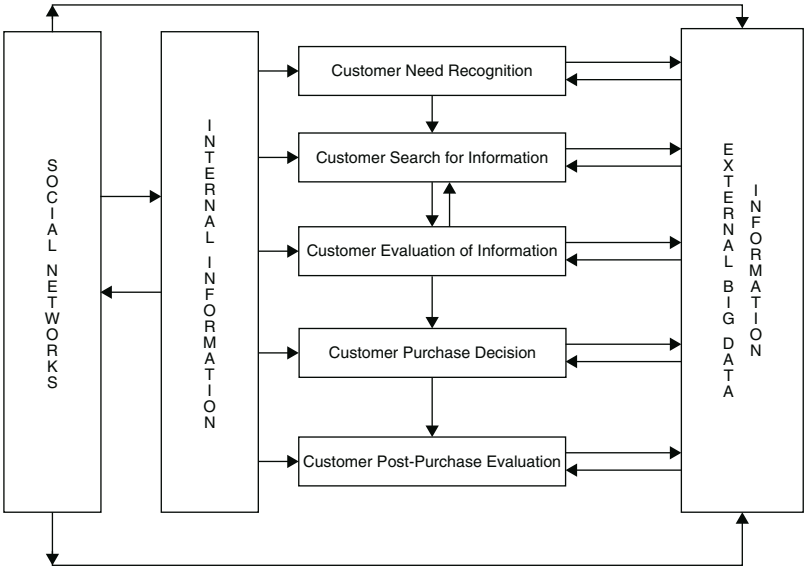

Figure 2.3 Big data purchase process model

As a consequence, organisations need to monitor this type of information and create new analytics to assess social media information flows. Furthermore, these social media offer a whole new range of ways in which organisations can interact with customers. One of the first

opportunities was the creation of product review forums by online suppliers which permitted consumers to comment upon products or services they had purchased. Subsequently other opportunities have evolved through individuals and organisations creating online blogs, issuing short messages via Twitter and interaction between individuals on social networking sites such as Facebook and MySpace.

According to Hoffman and Fodor (2010), social media has created a world in which customers are in control of their online experiences with a significant proportion of online content created by the user rather than, as it is in the traditional media, by the supplier. They proposed that marketers need to establish the '4C' analytics which assess the motivation of participants engaging in social marketing; namely 'connections', 'creation', 'consumption' and 'control'. Organisations proactively exploiting social marketing through creating chat rooms, or employees publishing blogs, can rapidly consume significant resources. The most important of which is the time involved in responding to online customers contacts. Hence, there is a need to define appropriate metrics to ensure social marketing campaigns are generating a positive cost/benefit outcome. Culnan et al. (2010) proposed key metrics are size of the community, growth rate of the community and the proportion of the community members engaged in interacting with each other or the company. These researchers recommended methodologies should be evolved to generate financial measurements (such as revenue or cost reduction), effectiveness outcome (such as improved service quality, customer satisfaction) and internal evaluation (such as employee satisfaction).

Culnan et al. analysed the Fortune 500 websites' utilisation of social media platforms such as Twitter, Facebook, blogs and client-hosted forums. They concluded that Twitter was the most frequently used, followed by Facebook, blogs and client-hosted forums. They recommended that firms should not immediately engage in whichever social media platform has become the most popular. Instead, there is a need to select platforms which can most effectively deliver the defined aims of the organisation's social marketing campaign. Selected platforms must be compatible with organisational culture, performance aims and the nature of customer behaviour. For example, Twitter may be appropriate for instant response to customers but not effective where there is a need to communicate a significant quantity of information.

Reaching customers with marketing messages is important but as Lipsman et al. (2012) noted, the friends of customers represent a substantially larger audience than customers themselves. They concluded

that for each customer there are in excess of 30 friends. Facebook exploits this situation by delivering a high number of promotional impressions to interested potential customers but, in addition, permits the advertiser to be positioned in a social context that may enhance appeal among the market sector's entire target audience.

Social media promotional impressions can be translated into traditional media planning variables such as reach, frequency and gross rating points (GRPs) to achieve a comparison between a social website and other media. Reach and frequency will be greatest for those firms with the highest customer base. However, actual outcomes will be influenced by the degree to which the social content of the company message is of appeal to the organisation's social network audience.

In attempting to assess the benefits of social marketing, the issue arises of what is an individual worth. Assessment might be based on metrics such as increased interaction, increased customer loyalty or scale of influence over friends. As with terrestrial media assessment, it is usually extremely difficult to relate level of social marketing expenditure to the generation of incremental sales. This outcome, however, is possible in the case of promotional incentives such as online coupon offers, because these can be coded, tracked and actual redemption rates assessed.

Lipsman et al. concluded that standard approaches that focus on raw counts or viewings of a specific web page fail to depict the potential and realised scope of social media brand impressions. In their view, the company must undertake further analysis of the raw social media data in order to generate reach and frequency figures for audience types, as well as to gain an understanding of the attitudes and behaviour of the different audience types. Only then can realistic decisions be made over whether social marketing is delivering either equal or even better outcomes than ongoing reliance on terrestrial marketing campaigns.

The potential problem of utilising banner advertising is ensuring website visitors take any notice of the promotional message. Banner effectiveness can be enhanced because accurate understanding of the target audience permits highly accurate online promotional targeting (Machanda et al., 2006). A key potential strength of social networking sites compared to company websites is the amount of time spent on them by users. This is only a benefit to the advertiser, however, when the site visitor notices the advertisement.

Ateljević and Martin (2011) researched Facebook users' response to banner advertisements. They found that almost two-thirds of respondents never look at banner advertisements. This indicates the biggest

problem facing the advertiser is that Facebook users are online to interact with friends and have little interest in any information which is not directly relevant to online social interaction. Interestingly, respondents were more likely to have a more favourable attitude to advertising by small firms within their immediate geographic location (such as local restaurants, clubs or retailers). A possible reason for this positive attitude is being aware of local facilities is beneficial, being associated with planning and participating in social activities with friends who live in the same area.

The increasing visitor levels being achieved by social networking sites such as Facebook has led organisations to switch advertising funds from other channels to support advertising activities on social networking sites. In ensuring the correctness of this decision, organisations need to create metrics that can be used to assess the outcome of social marketing campaigns. Lipman et al. proposed the following four metrics to assess 'social-media brand impression':

1. *Page publishing* – the unpaid impressions appearing on the fan page wall and may also appear in the NewsFeed of a fan or a friend of a fan.
2. *Stories about friends* – impressions occurring when a friend actively engages with a brand or organisation by expressing their feeling or views on a friend's wall or in the NewsFeed.
3. *Sponsored stories* – paid impressions usually inserted by organisations as a component of their social marketing activities.
4. *Advertisements with social content* – paid for by organisations as a component of their social marketing activities.

UNDERSTANDING ONLINE MOTIVATION

Case Aims: To illustrate how behaviour within online social groups will influence marketing activities.

Culnan et al. (2010, p. 245) posited 'value comes not from the platform itself but from how a particular social media platform is used, ... social media applications have the potential to provide additional value beyond familiar e-commerce activities such as distributing content or driving sales because they enable the formation of online customer communities known as virtual customer environments (VCEs)'.

These researchers stated that firms generate incremental value from VCEs because these increase the interaction with customers and can lead to higher customer loyalty. Customer use of Facebook and joining VCEs is a purely voluntary action. Hence firms do need to develop marketing campaigns that result in attracting more visitors to a Facebook site. These campaigns can be expensive. Hence, it is important that the organisation gains benefit from implementing social marketing programmes.

Facebook is the most popular global social networking tool used by groups constituted of friends and other social acquaintances to share information about common interests. Companies utilise Facebook to generate brand awareness with the aim of stimulating viral activity between group members. Groups have the option of being open or closed and a page originator can decide who can join their group. Any Facebook user can connect with a company-sponsored page and become known as a fan. The ability to send messages directly to a Facebook group user's inbox provides significant opportunities for advertisers to communicate personal messages. These messages are much more effective and efficient than wall posts or News Feed updates (Xia, 2009). Facebook members can also agree to opt into an advertiser's e-mail promotional campaign. There are indications that advertising recall, awareness and purchase intention can be heightened when a user's News Feed indicates their friends have become fans of a particular brand. Similar enhancement is generated when group members forward viral advertising to other friends.

Park et al. (2009) identified four psychological needs to explain participation in Facebook groups; namely socialising, entertainment, self-status seeking and information seeking. These needs are related to social outcomes of individuals seeking interaction with others and are indicative of group members' willingness to engage in viral advertising (Dobele et al., 2007).

The speed and effectiveness of viral advertising campaigns on Facebook depend on consumers' involvement and engagement in groups on the site. Chu (2011) undertook research to examine possible links between Facebook brand-related group participation, viral advertising responses and the psychological characteristics of self-disclosure and attitudes among Facebook group members and non-members. The study revealed that Facebook group members are more likely to disclose their personal data on Facebook and exhibit a more favourable attitude toward social media and advertising in

general. It would appear, however, that participation in Facebook groups does not exert added influence on an individual's willingness to engage in forwarding viral advertising messages. To make Facebook groups more cohesive and powerful, Chu recommended advertisers should focus on communicating more personalised and customised messages to members' inboxes to announce upcoming promotions or provide incentives which encourage them to pass on messages.

A survey across 11 countries recently revealed that 68 per cent of social media users would opt for a 'do-not-track' feature if available. This growing concern over privacy represents a new opportunity for the online industry. Omlet is a social enterprise messaging service which permits users to store their data on a third-party cloud rather than being retained and used for targeted advertising (Anon, 2014). Two new approaches being examined are homomorphic encryption and differential privacy. The former allows computations to take place while data remains in an encrypted state. Differential privacy protects anonymised data such as personal health records. When an anonymous source is queried, algorithms add 'noise' to the data so that information about a specific individual is obscured. Compartmentalisation segregates programme components such as an e-mail interface, so that only communications that are absolutely necessary are made available. This approach can prevent malicious code in an e-mail attachment infecting other programmes. Anonymous credentials is a way of providing user authentication without revealing an identity. The user's device is asked to complete a cryptographic puzzle which only authorised systems know how to solve.

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3
Opportunities

Identifying change

No organisation is capable of responding to all sources and types of change. Hence in deciding upon a revision or fundamental entrepreneurial change in strategy, an organisation will need to define priorities in relation to which are the greatest identified opportunities.

Examination of the key issues of (i) satisfying market need and (ii) resolving external problems is recommended but it is inadvisable to merely focus strategic change in relation to just the organisational/market interface. The performance of organisations is determined by their effectiveness across all the activities of procurement, adding value and output delivery. All of these facets need to be examined to determine the requirement to revise or change future strategy (Chaston, 2012).

The other aspect of opportunity evaluation involves extending the assessment of the external environment to encompass all of the components which constitute the supply chain and market system of which the organisation is a member. This is necessary because important sources of potential entrepreneurial change may be located elsewhere within a supply chain or contained within the macro-environment surrounding the supply chain.

Market mapping

External environment change now occurs much more rapidly reflecting the more volatile and uncertain nature of the global economy coupled with the speed of new technological developments impacting online market systems. Ensuring a firm remains in business well into the 21st century demands more time and resources being committed to

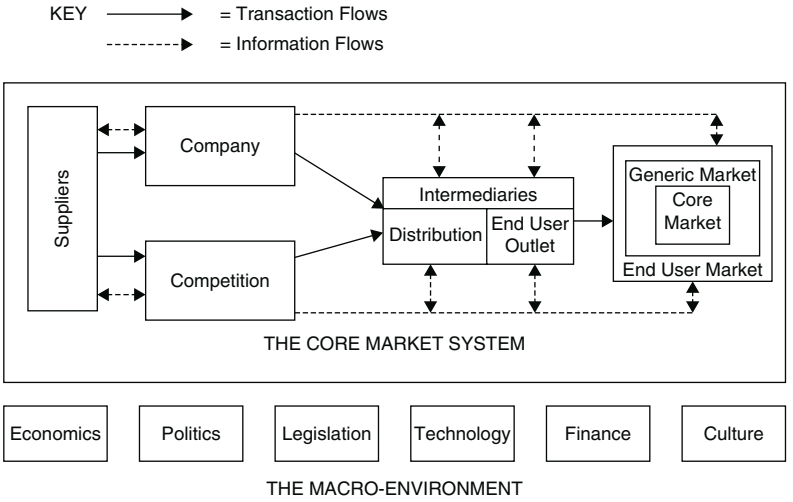

Figure 3.1 Map of a consumer goods market system

researching the source of potential opportunities and threats (Awuah and Reinert, 2012).

Given the increasing frequency with which firms must move to exploit opportunities or respond to emerging threats, there must be a clear understanding of the factors which influence future performance. One approach is to build a market system map. As shown in Figure 3.1, the role of a firm can be that of supplier, producer, intermediary and/or end user outlet. Analysing the map permits identification of variables of key influence. During evolution of new or revised marketing strategies, these variables need to be managed to implement an effective response to scenarios occurring now or likely to emerge within the foreseeable future.

Supply chains

Sam Walton was the first retailer to recognise that an alternative to competing upon price was to exploit efficiencies in distribution and logistics. He focused upon identifying new ways of optimising and integrating the retail supply chain with major emphasis upon exploiting IT to achieve this goal. His success eventually provided the basis for Wal-Mart becoming one of the world's largest retail chains. Early in the

life of Wal-Mart the company recognised that automation of product ordering and logistics management provided an effective strategy for lowering operating costs. Development projects involved initiatives such as loading of barcode data from checkouts onto the company computer system, using warehouse data to determine stock levels and developing hardwired connections to key suppliers' computers to permit automated re-stocking orders. Lessons learned from such innovations have subsequently been adopted across the retail industry.

A key focus of supply chain management is closer coordination between suppliers and distributors to improve delivery time accuracy and reduce the time between order placement and delivery. Exploitation permits both cost reduction and improved customer service (Janvier-James, 2012). Firms have discovered that effective management of information involves building seamless connections in order to be able to control inventory, forecast demand and utilise feedback to identify and then rectify problems within the market system. Although speed is of the essence, the demand for products in many markets is changeable, occurs intermittently and for short periods of time may be cyclical. Organisations within the supply chain also need to have the capabilities to resolve problems such as theft, physical damage and goods being misplaced or misdirected whilst moving through the distribution system.

The creation and operation of modern supply chains could not have been achieved without access to increasingly powerful computer systems to permit the acquisition, storage, re-accessing and interrogation of vast quantities of data. Not all of the knowledge about information management was generated in sectors such as retailing and fast foods. During the 1980s, manufacturers seeking to reduce inventory costs developed concepts such as 'Just in Time' (J.I.T.) and 'lean' manufacturing (Lamming, 1996). The complex nature of supply sources for components and sub-systems to support the production of the final product required horizontal and vertical integration. The former involves close working relationships based upon information-sharing between firms involved in similar production activities at the same level within a sector. Vertical integration demands coordination based upon information exchange between organisations at different levels within the supply chain.

Prior to closer integration of supply chains, many producers relied upon a push-based system, where manufacturing and distribution choices were based upon long-term predictions of expected demand. The approach has a long reaction time, causing an inability to meet

changing demand, and may lead to the creation of excessive inventory levels (Simchi-Levi, 2003). More integrated systems rely upon a pull-based philosophy, where manufacturing and distribution decisions are based upon customer demand. The approach reduces lead times, offers better market understanding and diminishes variability in matching sales to available stocks (Simchi-Levi, 2003).

The capability of organisations to acquire customer information has been revolutionised over the past two decades. Initially, this was caused by organisations moving to Electronic Data Interchange (EDI) in which usage of credit cards, loyalty cards and sales provided data which could be subjected to automated data analysis to identify trends and the different needs of various customer segments. The next and possibly most important revolution in the acquisition of data was the advent of the Internet, permitting organisations to acquire customer information in real time. This was subsequently followed by members of supply chains exploiting the Internet to exchange real-time data, such as order shipments and progress of goods within distribution channels.

NEW FROM OLD

Case Aims: To illustrate how products can be recycled to generate incremental revenue from potentially obsolete benefit propositions.

The speed with which customers in the online world are prepared to switch to next generation products has led to the emergence of opportunities for adding value from involvement in product recycling. One company which has been engaged in this activity for many years is IBM. The company leases about $40 billion worth of products through IBM Global Finance (Rutman, 2002). The company's Global Asset Recovery Services (GARS) division uses a variety of methods to recover value from products, including merely cleaning the product prior to resale, restoring and upgrading with new components to modernise the product prior to resale or adding new components or software that creates even more powerful products which can be resold to new or existing customers. GARS also generates revenues by providing an asset-recovery service based upon dismantling products and selling rescued components to other electronics manufacturers. The combined effect of all these activities has led to enhanced customer loyalty and by recovering value from the returned products, IBM is able to offer more competitive leasing options.

Opportunity identification

Prahalad and Ramaswamy (2004) suggested that in an increasingly digital world, adding value can encompass a broad range of activities possibly involving networks and co-creation of new product or service propositions. In some cases, further leverage in co-creation is achieved by involving customers. One example is the open source software Linux which constituted one of the first times in the IT industry where customers could develop entirely new products and then share these with other Linux users. More recently, the concept has become utilised by organisations in the smartphone industry, permitting individuals and organisations across the entire supply chain to develop new apps for placement on various mobile communications platforms. This trend has allowed manufacturers in the telcoms industry to expand their operations by moving from being a supplier of tangible goods to also being the provider of new services.

Fuller (2010) suggested that engaging in strategic expansion through networking and co-creation can offer the following opportunities:

1. Enhancing a reputation for leading edge innovation.
2. Generating incremental added value by expanding the organisation's range of activities.
3. More rapid acquisition of new information concerning emerging trends by moving the company nearer to the final customer.
4. More rapid implementation of actions that can enhance competitive advantage.
5. Exploiting upstream sources' ability to assist in identifying leading edge innovation.
6. Accessing external resources which can reduce the costs of new products and 'time to market'.
7. Creating a stronger commitment towards other members of the supply chain, which will be reflected by greater loyalty towards the organisation by these partner organisations.

Resource fit

In assessing entrepreneurial opportunities and evolving appropriate strategies, there are a number of different variables which need to be taken into consideration (Bingham et al., 2011). One is the position on the Product Life Cycle (PLC) curve. In most long-established, stable industries, standards are well-defined, customer needs are well

understood, life cycles are long and predictable. Innovation as a source of competitive threat is relatively low. In rapidly changing industries such as IT and telecoms, technology standards may only just be beginning to emerge or in some cases not even yet exist. Life cycles are short, there is huge diversity of available products and services and no clear dominant technology or product/service specification may yet be established. As a consequence, innovation is a major threat to future survival.

Management must ensure there is a potential fit between available internal resources and the possible strategic response to identified change. This assessment of resource fit should encompass both tangible assets such as the modernity of production facilities, and intangible assets such as the level of advanced or specialised industry knowledge contained within the organisation's workforce. The assessment must identify which resources are strategically most valuable, inimitable and non-substitutable. This is critical because these resources are usually the basis for an organisation sustaining competitive advantage (Chaston, 2012).

Important internal resources may be tightly interlinked, as is exemplified by Intel's R&D operation, chip design centres and advanced chip fabrication plants. In contrast, within an online services provider such as Facebook, resources tend to be more loosely linked, with different teams engaged in tasks associated with developing new services or enhancing the performance of the existing services portfolio.

EARLY OPPORTUNITY RECOGNITION

Case Aims: To illustrate how early recognition of the opportunities offered by the Internet were exploited by major firms.

The bursting of the dotcom bubble in the late 1990s was seen by some as evidence the Internet was not as had been predicted – the advent of a new world, offering numerous additional business opportunities and permitting expansion of existing business activities. Rifkin and Kurtzman (2000) noted that some major organisations took a different view, adopting a perspective that the Internet offered an opportunity to radically alter the nature of the customer experience. From their analysis of the activities of large, terrestrial companies which became involved in exploiting the Internet, these

authors concluded online success could be attributed to the following shared organisational traits:

1. Do not dabble, either do it right or not at all.
2. Embrace the need to adapt and change.
3. Failure is not an option.
4. Do not permit the IT department to take control of e-business initiatives.
5. Accept the Internet provides an opportunity to introduce fundamental changes in business practices.
6. Share best practices across the entire organisation.
7. Ensure the CEO personally leads the organisation's Internet strategy.

Rifkin and Kurtzman reviewed a number of case studies to illustrate the importance of these identified traits. One is GE's plastics division who were early movers in 1997, creating Polymerland. This permitted customers to complete all transactions online, and allowed for the centralisation of all distribution activities. By June 1999, the Polymerland site was generating $2 million in online orders every week and by 2001 annual sales had exceeded $3 billion.

The General Motors CEO, Rick Wagoner, recognised that the Internet offered an opportunity to re-invigorate a company which had been losing market share for over a decade. Wagoner defined an objective of integrating the Internet into every business function and where possible into all aspects of the company's marketing programmes. Within a very short period of time, on average over 2200 people were visiting the company's BuyPower website daily. The website provides dealers with an average 1000 leads per day. In 2000, sales attributed to the website accounted for $8 billion in additional revenue. Online technology, coupled with new design processes, also helped reduce GM's product development time from 48 to 18 months, saving over a $1 billion in engineering costs.

Strategic thinking

Due to interaction between external environment assessment, opportunity identification and future strategy, Chaston (2010) proposed strategic planning, especially when focused upon implementing entrepreneurial change, is likely to be a circular rather than a linear sequential process.

This is because a decision in relation to one of these three key variables will interact with the other two variables. Where environmental assessment suggests highly competitive conditions exist, one strategic option is to consider entry into a new or related market, permitting a much higher return on owned assets. However, the organisation must be certain existing resources are able to support this move. Failure to undertake this assessment can become extremely expensive, should resources prove to be unsuitable for supporting a market change strategy.

In the online world, the adverse impact of this type of error was illustrated by Amazon deciding to leverage the organisation's online ordering and inventory fulfilment capabilities and to move from books and music into other non-perishable, more seasonal products, such as toys. The company encountered problems in relation to huge variations in the demand for retail stocks that occur with highly seasonal goods. Furthermore, their logistics system was not really designed to handle products such as toys, which come in a huge range of shapes and sizes.

Markets which are unstable or moving towards instability usually require organisations to either update or change their strategy. This is because instability has the potential to render obsolete existing marketing strategies and erode competitive advantage. For example, Intel's leadership in the microchip industry has been threatened in recent years by the UK firm, Arms Holdings, who much earlier than Intel recognised the opportunities which existed to design low-power consumption microchips for mobile devices such as smartphones and tablet computers.

The potential problem with entrepreneurial change is the organisation may lack the resources required to implement a new or revised strategy. Mohdzain et al. (2012) suggested one solution is to implement a co-evolution strategy. This permits organisations to achieve greater leverage in terms of an ability to implement change. In the world of smartphones, major manufacturers such as Samsung faced the new threat posed by Apple's entry into this market sector with the iPhone. These manufacturers lacked the internal capabilities to develop a new operating system to permit their products to connect seamlessly with the Internet. The solution was to enter into co-evolution strategy with Google which licensed them to use Google's Android operating system in their next generation of mobile devices.

In rapidly changing industries, new competitors may enter, process technologies may change or be replaced by completely new technologies, or customers may modify their preferences and needs. Under these circumstances, firms must remain flexible, able to revise strategies and be

prepared to implement business model revisions. Bingham et al. (2011) proposed rapidly changing markets require organisations to select a focal strategic process. This should be based upon choosing one lead opportunity to define the nature of future operations. Bingham et al. advised against organisations selecting a 'me too' proposition. This merely replicates the strategy of another firm which is already achieving success.

The American corporation Cisco provides an example of a focused organisation, having for many years engaged in the development and supply of hardware components for Internet systems. The company has grown both organically and through the acquisition of new businesses which complement Cisco's existing product portfolio. Concurrently, the company has invested in the development of superior supply management capabilities by using the Internet to create a highly integrated procurement, manufacturing, logistics and marketing operation. As a consequence, it is extremely unlikely that a new entrant into this sector would be successful in replicating Cisco's business strategy or competitive advantage.

Where changing external conditions, technological change or the entry of new competitors may reduce future opportunities, defending the current business operation through cutting price is usually less advisable than seeking opportunities to provide the basis for achieving future growth (Koçaş and Bohlmann, 2008). A classic example of this strategic philosophy is provided by the return of Steve Jobs as the CEO of Apple. He rapidly divined that sustaining the current strategy of attempting to survive in the PC industry was doomed to failure because the entry of firms from countries such as China was leading to product commoditisation. He redirected the company to seek ways of exploiting the new entrepreneurial opportunities by creating mobile devices such as the iPod and iPhone as a way of exploiting the data downloading capabilities offered by the Internet.

BOXING CLEVER

Case Aims: To illustrate how changing customer behaviour and new technology is altering the nature of opportunities in the gaming console industry.

An example of changing fortunes both before and following the advent of the Internet is provided by the video game console industry, where at different times companies such as Sega, Nintendo, Sony

and Microsoft enjoyed periods of market leadership only then to be overtaken by one of their competitors introducing new technologies (McPhee and Nuttall, 2012). One problem now confronting the industry is the changing preferences of consumers. This has emerged because some people are utilising their PCs linked to the Internet as a platform on which to engage in social multiplayer games and for downloading digital content. One new market entrant which is exploiting this trend is the Steam download service, offering titles such Activision Blizzard Diablo III, which sold 3.5 million copies in the first 24 hours following launch in May 2012. Added to the woes of the suppliers of dedicated games consoles are multi-core processors in smartphones, tablets and TVs, which are beginning to match the processing capacity of game consoles. As a consequence, some games publishers are offering their products as apps which can be accessed via social networking sites such as Facebook, and consumers who previously might have been users of products like Wii tennis are switching to activities such as downloading FarmVille.

Market conditions

Online markets permit buyers and sellers to more rapidly exchange information. Power and Simon (2004) suggested this has the potential to alter the economics of trading because buyers are now able to access information that previously was only known by the seller. This reduces information asymmetry, resulting in falling transaction costs. They suggested that sellers will be less able to exploit buyers' lack of knowledge to utilise opportunistic pricing. Furthermore, buyers, by being more informed, may be able to purchase goods at lower prices or demand higher quality products or services when prices remain unchanged (Grover et al., 2006).

Unlike the terrestrial world the nature of online markets means that organisational behaviour within any sector may not be determined by any single dominant business model (Berryman et al., 1998). This is because some online markets may be controlled by sellers and others by the buyers. In a seller-controlled market, buyers will undertake extensive searches for the best available proposition. In contrast, transactions in buyer-controlled markets are determined by customers who do not usually engage in extensive searches for suppliers. This is because buyers know what they want and how much they are prepared to pay.

Nucciarelli and Gastaldi (2008) noted that organisations must understand that the ability to support supply chain technology and sustain an efficient logistics operation is a critical requirement in online markets. This is because online customers have acquired high expectations over service quality. As a consequence slow downloads, significant website downtime or extremely long delivery times will lead to a decline in sales revenue.

The greatest performance enhancements in online markets are available to 'first-mover' entrepreneurial organisations which have recognised ahead of competition that an opportunity exists to re-define market structures through the introduction of a new business model. Ozan and Kauffmann (2007) suggested that the Internet is able to offer this outcome to both new business start-ups and existing firms. For example, Dell, by migrating from terrestrial to online direct marketing, was able to further consolidate the company's position as the leading supplier of computers which customers could customise to their own personal specification at time of ordering.

Where the identified Internet opportunity has led to the emergence of a new business model, other less aware organisations may be forced out of business or face a major decline in sales. One example is provided by the advent of the online stockbrokers, Charles Schwab, in the US investment industry (Sharma and Bingi, 2000). In the pre-Internet age, the brokerage industry was dominated by firms such as Merrill Lynch and Goldman Sachs, who offered a 'full brokerage' service, charging a commission for trading shares on behalf of their clients. In an online stock brokerage service the customer utilises a device such as a PC to enter the trade, thereby eliminating the need for intermediaries and reducing transaction fees. The outcome is that many traditional terrestrial brokerage firms have either disappeared, lost revenue or have been forced to offer their own online stock trading services.

The problem of online business models where transaction decisions are primarily driven by the lowest possible price is that these tend to attract new organisations into the market who are prepared to undercut existing suppliers. Verma and Varma (2003) recommended the most effective counter strategies to sustain customer loyalty are actions such as offering a superior level of service or expanding the range of services made available to customers. In the case of the online brokerage industry, companies such as Charles Schwab have invested in continually upgrading both hardware and software, to offer more rapid and more accurate transaction management facilities than their smaller, price orientated competitors.

Online convergence

Porter (1985) proposed that the value chain concept is an effective tool for identifying new opportunities to achieve greater added value. Internal value chains describe the various value-added stages, from purchasing materials through to distributing the final product to customers. External value chains describe all the activities within a supply chain, commencing with raw material creation through to the delivery of output to the final end user. Crain and Abraham (2008) noted that although many organisations tend to focus upon seeking ways to enhance internal added-value activities, the advent of collaboration and co-creation has caused external value chains to become an increasingly important source of new opportunities. Examples of opportunity include:

1. *Outsourcing* by transferring certain primary or support functions to the external value chain.
2. *Vertical integration* by taking control of one or more additional stages of the external value chain, bringing them inside the organisation.
3. *Horizontal expansion* involving new product lines or expanded channels of distribution.
4. *Upstream strategic alliances* with suppliers, based upon forming collaborative partnerships in areas such as the co-development of new products
5. *Downstream strategic alliances* by forming closer relationships with intermediaries or customers.

The accounting and consultancy firm PWC (2000) concluded that the Internet has required organisations to re-evaluate internal and external value chains to determine how these represent sources of future opportunity. In their analysis, PWC proposed a four-stage model commencing with expansion of business channels, followed by integration of value chains, industry transformation and finally industry convergence.

Expansion of distribution channels delivers efficiency gains and improvements in customer service through utilising business models such as online retailing and e-procurement. Integration of a value chain enables a company to create additional added value through building closer links with customers and suppliers. Concepts such as online portals can improve accessibility to products or services for both suppliers and customers.

Industry transformation refers to both changes in individual business operations and the restructuring of an entire industry sector; thereby

permitting firms to deliver higher value to customers in a more efficient manner (Mahadevan, 2000). This involves companies focusing upon their core competencies and forming alliances with other organisations to perform non-core functions. An example of this strategic philosophy is provided by small retailers who become affiliates of Amazon and use this organisation as their primary online marketing channel.

Convergence refers to the phenomenon whereby companies belonging to different industries merge or cooperate with each other to supply products and services to customers through a single point of contact. The process is not solely attributable to the Internet. Other causes of convergence are deregulation and business globalisation. The common characteristic of all convergence is that business models undergo change and new forms of supply chains emerge.

Rim et al. (2009, p. 101) reviewed how the Internet has impacted the telecoms and broadcasting industries in relation to convergence changing business models and creating new opportunities. They defined convergence as 'a phenomenon whereby telecom and broadcasting services are provided bundled, through a single network, blurring both the technological and regulatory boundaries between these two traditionally-distinct sectors'. They concluded that the Internet has enabled the provision of integrated services; thereby removing the distinction between the two types of businesses which previously were constituted of two separate value chains. These authors proposed that the new convergent value chain has resulted in closer links between telecoms, IT, media and other organisations engaged in the exploitation of the Internet.

The pre-Internet telecoms value chain was constituted of four distinct elements; network building, transmission, supply of value-added services and delivery of customer services. Convergence has resulted in a recombination and realignment of the elements within industry value chains leading to changes over which organisations are responsible for content creation, service aggregation and service distribution. The first phase in the new service chain is the building of content and service infrastructure. Online content, once created, may be supplied to different target audiences. A key success factor for the online content business model is economy of scale.

The creation of telecoms and media infrastructure usually involves substantial front-end investment but once created, ongoing operations can be delivered at relatively low costs (Schnorrenberger, 2008). Content has often previously been created in traditional, terrestrial environments. Hence re-adapting and re-using content upon moving online is a relatively low cost proposition. As a consequence the media

and telecoms sectors' involvement in the Internet often merely requires redirection in the use of existing fixed, broadcast and wireless network facilities (Chesbrough and Rosenbloom, 2002).

Seybold (2008) concluded that the second stage of enhancing the value chain is constituted by aggregation of content and services. Aggregation and matching plays a critical role in the creation of value from distributing content via the Internet. The process permits re-intermediation within the value chain through the creation of marketplace online information and transaction models being made available. This results in the telecom–broadcasting convergence business model acquiring a cost advantage over other organisations which are not in a position to aggregate content or offer such a comprehensive distribution channel.

The third stage in value-added activities involves network infrastructure providing the platform for distributing a range of differentiated services. Examples include expanding service provision to include knowledge sharing, customisation of services, order tracking and information services related to order filling and delivery. The fourth stage of value addition involves access and connectivity. The key objective is to ensure a seamless link between service providers and Internet users. This is achieved because contributors from various sectors of industry have already acquired the capability to manage technically complicated services during their involvement in the effective management of their offline business activities (Eunni et al., 2005).

McIvor et al. (2003) identified the most important element in online value chain integration involves the online customer interface. In recent years, the performance of online interfaces has been upgraded by a convergence among telecom firms, ISPs, mobile devices and new apps. Ultimately, consumer satisfaction with new services permitted by digital convergence – such as telemedicine, tele-consultation and telematics – will depend upon how the perceived benefits are received in the marketplace. This is because user satisfaction is an essential purchase intent antecedent.

Meta opportunities

Some technological advances occur as a result of efforts to overcome very significant known problems. The invention of the jet engine, for example, occurred because of the speed constraint created by powering aircraft with propellers. The larger the problem, the greater is the commercial potential associated with the provision of an effective solution.

Organisations seeking major success would be advised to consider known large or meta scale problems that are facing the human race to determine whether any of these represent a significant opportunity for future growth.

One of the greatest meta problems facing the world is the declining availability of non-renewable hydrocarbon fuels (Rees, 2008). Recently the price of oil has risen dramatically, fuelled in large part by the rapid growth in the Chinese and Indian economies. Concurrently this triggered higher prices for other non-renewable energy resources and placed pressure on global electricity prices. With known and newly identified oil and gas reserves, plus ongoing developments in new extraction technologies such as the use of fracking, the world is unlikely to run out of hydrocarbon fuels any time soon (Hartley et al., 2008). Nevertheless, the interaction between supply and demand will result in consumers and organisations facing rising costs for carbon-based fuels for the balance of the 21st century. This outcome will impact other economic activities such as the extraction of minerals, manufacturing of products, production of services and the distribution of goods. Hence significant opportunities exist for those organisations which are able to develop meta solutions that can assist in keeping down energy consumption costs.

Cirman et al. (2009) believe an even greater problem is the burning of hydrocarbon fuels contributing to global warming. The Internet cannot be expected to solve the problem of dramatically reducing consumption of hydrocarbon fuels. Nevertheless Woods (2010) identified a number of aspects of online technology which can offer firms the opportunity to benefit from entrepreneurial Internet-based solutions which contribute to reducing the impact of this meta problem. Online purchasing using centralised distribution facilities and the reduction in the need for people to make visits to terrestrial outlets has already had a significant impact on fuel consumption. Continuing advances in broadband capacity and other Internet communication technologies are to be expected to lead to more people becoming tele-workers and for businesses to reduce the level of international travel by using online videoconferencing.

Although technological advances such as the development of more efficient engines and hybrid electric or gas powered vehicles will have a more direct impact on energy consumption, Murray (2007) noted that the Internet can also be expected to have an increasingly beneficial impact in the transportation sector. Vehicle owners already benefit from satnavs to identify the most fuel-efficient routes and vehicle manufacturers are creating remote sensing systems that can identify when

a vehicle is developing an operating fault that impairs fuel efficiency. Driverless cars offer another strategy to assist energy conservation.

Cloud computing reduces energy consumption by transferring data acquisition, storage and processing to a centralised server farm, which consumes significantly less energy per unit of data processed than free-standing mainframe computers or PCs (Anon., 2010). Another source of energy saving is the increasing utilisation of new microchip designs in PCs, tablets and mobile devices that consume far less energy than their predecessors.

A resource problem which has graver implications than rising energy costs, is the growing shortage in global food supplies. The underlying cause of this problem is that demand is rising at a rate greater than can be sustained from available supplies (Rosen and Shapouri, 2009). More of the world's cereal output is being directed to the less productive agricultural process of feeding crops to cattle to meet demand for meat by the world's ever expanding middle classes (Hojjat, 2009). The rise in prices has been exacerbated by financial investors speculating in commodities (Singh 2009). Bogataj (2009) concluded that although biological solutions such as the development of drought-resistant crops are likely to be the most critical way of improving food production, the advent of smart sensors linked to the Internet to monitor events in remote locations does offer some interesting entrepreneurial opportunities to more effectively manage agricultural output. For example, an Australian firm has developed the technique known as variable rate irrigation (VRI). This uses sensors linked to software and a satellite global positioning system to define the precise positioning of each sprinkler head to determine how much water should be sprayed at any specific point in time (Anon., 2012).

The healthcare meta problem

Another meta problem is the rising cost of healthcare, resulting from ongoing advances in medical technology (Chandra and Skinner, 2012) and population ageing, with the latter causing the emergence of new healthcare problems such as Alzheimer's and dementia (Callahan, 2009). One way of reducing healthcare costs is to exploit 'smart' technology to manage and exploit the data which are generated during the diagnosis and treatment of patients (Zuvekas and Cohen, 2007). Known as 'm-health', this activity has been greatly enhanced by the advent of mobile technology. The effectiveness of m-health will continue to be improved as information and telecom infrastructures converge to create

new mobile health systems and the technology offers benefits in availability, miniaturisation, data transmission speed and communication bandwidth (Simpson, 2003).

SMART IMPLANTS

Case Aims: To illustrate how healthcare treatments can be enhanced by exploiting smart technology.

In the past, healthcare treatments of conditions such as heart disease relied on early diagnosis and invasive techniques to treat heart problems. Recent developments in the miniaturisation of sensors are beginning to now render such approaches obsolete. Sensors have been developed which the patient can wear or have implanted into their body that monitor variables such as blood pressure or provide electrocardiograms (ECG). Once these tiny instruments register an irregularity, they automatically contact a diagnosis centre where doctors are on call on a 24/7 basis (Anon., 2008).

Intelligent implants are a critical aspect of future medical treatments. For instance, the risk when fitting a new hip joint is that the joint is rejected by the surrounding tissue. Intelligent implants measure how the patient's immune system is reacting and transmit the data via radio signal to the doctor in order that the problem can be localised and treated. Implanted sensors can also be used to monitor bone healing after prosthetic implant surgery. These new technologies are allowing organs and bodily functions to be permanently monitored by doctors even when the patient has returned home after surgery (Connolly, 2009).

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4
Technology

Importance

Technological change is possibly one of the most critical of the meta events that can create a future strategic opportunity or threat for any organisation. This is because technology has the potential to offer the basis for creating totally new industries or permit smaller firms to develop an entrepreneurial competitive advantage through which to challenge market leaders. Technology may even allow developing nations to implement faster industrialisation of their economy, which can eventually permit these countries to become the new global market leaders.

Erikson et al. (1990) proposed that technology can be divided into three types:

1. *Base technologies* – which are fundamental to the production of products or services in an industrial sector.
2. *Key technologies* – which provide sources of competitive advantage.
3. *Pacer technologies* – which can be expected to evolve into the key technologies of the future.

Not every firm has either the skills or resources to be involved in exploiting pacer technologies. However, for those firms which have such capabilities this can often provide the basis through which to achieve a leadership position or sustain existing market dominance. The importance of technology varies by industry. In part, this is due to the nature of the product offering. Opportunities to utilise new technology are significantly lower in most branded consumer food products than in high tech sectors such as IT or telecoms. Hence any analysis should

take into account the degree to which technology permits (a) achievement of a higher level of performance relative to competition and (b) provides the basis for generating differences in the magnitude of added value within an industrial sector.

Where technology neither permits achievement of superior performance or greater added value, the market is likely to be very fragmented, containing numerous firms, all seeking non-technological ways of achieving a competitive advantage. In situations where small specialist firms can identify an opportunity to exploit technology to achieve superiority, this permits firms to occupy specialised market niches where there are few or no competitors.

Industry leaders tend to exhibit the ability to achieve greater value through superior competences. In the case of the Internet, first-mover firms usually attain a leadership position by exploiting IT as the strategic pathway for achieving performance superiority. Sustaining success involves developing new or next-generation technology and/or exhibiting superior marketing capabilities. In the case of reliance upon marketing capability, this is a strategy adopted by early market entrants who, having attracted the majority of the initial customers, now rely upon marketing campaigns to sustain customer loyalty. Where major opportunities exist to exploit new technology to deliver improved performance, this may result in the emergence of new competitors.

SENSORS

Case Aims: To illustrate how technology-based innovation is permitting a traditional sector of an economy to enhance performance.

Even long-established sectors such as agriculture are benefiting from exploiting the Internet to enhance operations and increase productivity (O'Driscoll, 2010). In the UK, tractors are being equipped with satellite technology to improve ploughing accuracy. Of even greater potential is the use of low energy wireless sensors to monitor local growing conditions and sending this information back to the farmer to assist crop management decisions. Research is in progress to develop sensors capable of monitoring and recording the uptake of nutrients and water in the plant roots. Known as tomography, the technology was originally developed for monitoring chemical manufacturing processes and for body imaging in hospitals.

Currently, some of the most successful remote sensors are those used to determine a plant's nitrogen status by measuring changes in light reflectance from the crop canopy. Data on nitrogen levels allows farmers to decide when, where and how much fertiliser to apply. This technology reduces costs, improves crop productivity and assists in minimising agrochemical runoff. In Canada, farmers can already identify grapevine disease by sending off DNA samples for analysis. New biosensors under development will undertake this process *in situ* and speed up early identification of plant diseases that can damage highly valuable crops.

A huge proportion of produce, especially in the developing nations, is lost during transportation. Data loggers are used on selected cargoes but these are expensive and can only yield information once the produce reaches its final destination. This means no action can be taken to preserve the produce before arrival at the customer's warehouse. Hence work is in progress to utilise low-cost RFID sensors that could provide real-time information about the produce during the entire journey from harvest to point of final sale.

Managing process

Williams (1992, p. 31) noted that 'time, the denominator of economic value, eventually renders nearly all advantages obsolete'. To combat this outcome, there is a need to recognise that the life cycle of a new product will vary by industry type. Williams identified three classes of industry:

Class 1, Slow-Cycle Resources – products and services shielded from competitive pressures that are durable and enduring.
Class 2, Standard-Cycle Resources – products and services are standardised, high volume goods.
Class 3, Fast-Cycle Resources – 'idea-driven' concepts based upon a technology which creates market uniqueness.

The majority of organisations involved in the exploitation of the Internet fall into Class 3. To ensure long-term survival demands a constant commitment to entrepreneurship to remain ahead by being the first to introduce the next-generation product or develop a new-to-the-world

proposition. Stalk (2006) proposed the following guidelines for managing innovation in Class 3-type products:

1. Know your product development processes and keep to strict quality goals and deadlines.
2. Do not let support functions impede key development activities.
3. Co-locate critical resources.
4. Organise around tasks at hand.
5. Value experience and ensure organisational continuity.
6. Align beliefs, goals, measurements and behaviours to maximise development speed.
7. Have a well-developed and disciplined planning process.
8. Seek to further improve the product soon after the initial launch.
9. Ensure internal capability platforms enable fast product development.
10. Use senior management to facilitate rather than participate in process implementation.

Swanson (1994) proposed a tri-core model to describe IT innovation. The innermost core (type I) involves changes in technologies, tools, techniques, methodologies or administrative principles. The second core (type II) represents innovations that support the administrative core of the organisation, such as financial management and inventory control. The third core (type III) deals with innovations where IT impacts the primary business functions of the organisation, such as electronic procurement systems, order entry systems or electronic interactions with the suppliers.

Lyytinen and Rose (2003a) applied the Swanson model to Internet innovation. Type I can be considered as fundamental changes in base technology, leading to enhancements in areas such as speed, reliability, access, storage capability, transmission speeds or operating costs. These innovations can include changes in hardware and software components within computing platforms. In relation to the Internet computing space, innovation covers new ways to codify and to represent systems. Examples are the use of open source software and XML-based speech interaction capabilities.

Type II innovation involves technological process innovation, such as the way data systems are managed and the integration of data from different sources. The focus of innovation is towards optimising internal core administrative functions. Type III innovations are orientated towards enhancing interface and external relationships activities such as online customer order entry systems and logistics optimisation.

Innovation focus

Achieving and sustaining market leadership is usually determined by the scale of superior performance achieved by a firm's new and existing products. In most cases, commitment to innovation will be supported by the organisation's ability to exploit key and pacer technologies. Schmidt and Porteus (2000) proposed the winner in a technology-based entrepreneurial market battle will be influenced by the relative level of competence of organisations in relation to both cost leadership and technological capability. Superior technological competence tends to be a scarce and expensive resource. They noted this strategic behaviour is exemplified by Intel, the world's leading developer and manufacturer of microchips. The company has a history of investing in the development of next-generation chips whilst concurrently focusing upon driving down the production costs for their current generation of products. This aggressiveness contributes to Intel's cost leadership for the lifetime of existing products and signals to competitors the huge investment which is required in manufacturing to compete over the life of any generation of products.

When determining how internal resources should be allocated, there is a need to identify those markets which represent the greatest source of opportunity or threat. One approach is to assume there are two dimensions to be considered; market and product performance. As illustrated in Figure 4.1, this approach results in an assessment based across four different market/product scenarios.

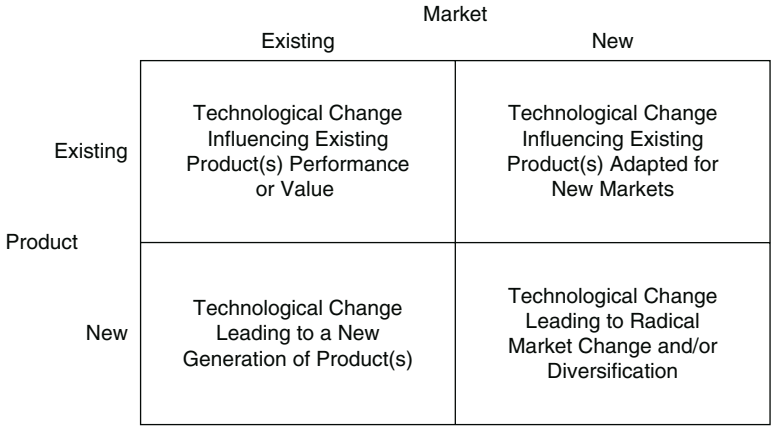

Figure 4.1 Product/market change matrix

ORGANISATIONAL FLEXIBILITY

Case Aims: To illustrate how flexibility enhances organisational performance.

In the context of innovation and exploiting new technology, organisations have the options of focusing upon revising operational processes or revising marketing activities (Feeny, 2001). Karin (2004) concluded that the Internet permits firms to exhibit greater marketing flexibility in relation to behaviours such as offering the facility on a 24/7 basis from remote locations and a wider range of products.

To validate and demonstrate the benefits of enhanced flexibility within an online world, Karin reviewed case materials of the following firms:

1. *Office Depot* – the world's leading office supply chain selling office supplies.
2. *NTTDoCoMo.com* – a Japanese company which uses mobile phone technology known as I-Mode that permits phone users access to the Internet to send e-mail and text messages and access websites.
3. *Ostive* – a wholesaler supplying perishable basic food items to retailers.
4. *Sigma-Aldrich* – a global company developing, producing and marketing a wide range of chemicals and diagnostic reagents.

Karin concluded that in dynamic environments successful firms adopt aspects of Internet technology that have the potential to enhance competitive advantage. To be effective, this has to reflect the needs and uniqueness of customer targets. For example, Sigma-Aldrich serves professional and scientific customers who expect the most up-to-date information whilst not being very price sensitive. Office Depot operates in the office supply market where low price is very important. The study revealed that in dynamic environments, the larger the product assortment the better the performance of the firm. To enhance efficiency, Ostive combined the use of the mobile Internet to enhance the capabilities of sales staff to manage the company's distribution relationship with customers. When operating in dynamic environments, firms can use Internet technology to increase the value of their customer offers. For example, Sigma-Aldrich is able to offer new data on advances in science to assist customers more effectively manage their R&D activities.

Internet systems

An Internet system, as illustrated in Figure 4.2 can be considered as being constituted of four distinct layers – Input, Internet Infrastructure, Data Management and Output. These systems can be automated or alternatively constituted of both machine and human interfaces. For example, devices such as security sensors are being utilised to create automated systems in which data from remote locations is acquired and, after data has been machine processed, the output can be directed back to a machine or a human interface for generating a response. In terms of product or process innovation, possibly the area with the greatest untapped potential is in developing new automated input and output interface devices. Across Internet infrastructure and data management, the focus of innovation is more likely to be orientated towards process improvements capable of achieving performance enhancement in areas such as data transfer speed, data storage capacity and speed of data analysis.

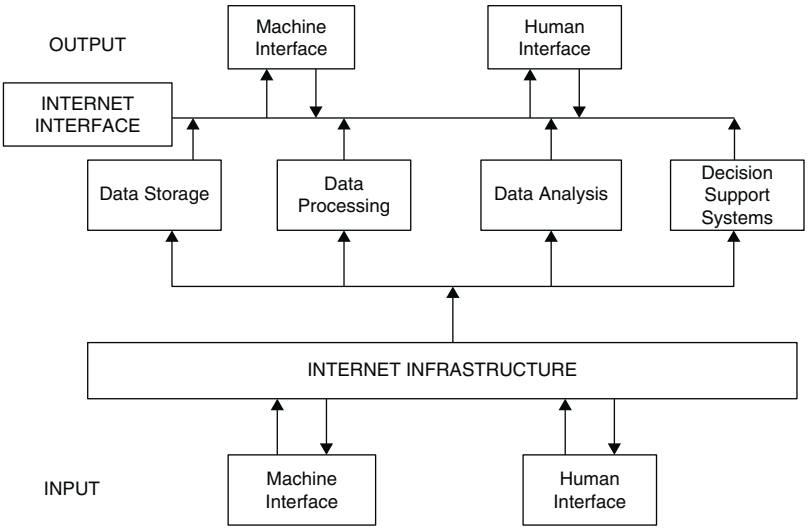

Figure 4.2 Online system components

CLOUD COMPUTING

Case Aims: To illustrate how process innovation in the field of data management has enhanced exploitation of the Internet.

For effective online data management systems, key factors are reliability, accessibility and scalability. Customers accessing an online retailer must be confident of being provided with a service which is both rapid and available on a 24/7 basis. In recent years, the key to fulfilling these service level requirements has been for organisations to migrate from relying upon their own servers to using cloud computing systems available from third-party suppliers.

Cloud computing provides access to computing resources such as computer applications and programmes via the Internet, instead of using software located on the organisation's computers (Buttell, 2010). Amir (2009) proposed that a functional definition of cloud computing is that the concept involves accessing hardware or software resources from any location via the Internet. Avaiable resources are constituted of services, applications, information and infrastructure involving groups of computers, networks and storage resources which are shared amongst many users, available on demand, scalable and configurable (Marston et al., 2011). Importantly for users, these systems can be rapidly created, implemented or decommissioned, and scaled up or down depending upon the volume of demand.

The process innovation associated with cloud computing has resulted in users being provided with greater operational flexibility, configurability, cost effectiveness and, relative to self-ownership of IT facilities, much lower operating costs. As demands for computing services change, the necessary computing power available within a cloud system can be increased or decreased. All of these features make cloud computing very attractive and facilitate greater flexibility in the way business is conducted. Possibly the greatest beneficiaries to-date are those firms which lack the internal skills or the major financial resources required for deploying typical cutting-edge enterprise-level IT, such as Enterprise Resource Planning (ERP) systems (Marston et al., 2011).

Initially it was firms utilising the Internet to provide online links for customers who migrated from in-house to cloud computing. More recently the concept is being extended to manufacturing.

Product design, manufacturing, testing and management can be contained within a cloud system and exploited by organisations seeking to create supply chains which are leaner, more agile and can instantly respond to variations in usage demand (Xu, 2012). An added advantage of cloud computing is that organisations can now avoid the losses that can occur when an organisation is unsuccessful in deploying a new expensive in-house information system. In those cases where the cloud provider is delivering an inadequate level of service, customers can rapidly switch to another supplier without incurring any major incremental costs.

Sources of influence

New technology has been a critical factor influencing the world economy during the 20th century. There is no reason to believe that ongoing advances in technology will not provide numerous opportunities for the emergence of new entrepreneurial firms in the 21st century. This outcome represents a threat for those firms who do not invest in developing next-generation products or operational processes. For entrepreneurs who exhibit competences similar to those of individuals such as Bill Gates or Steve Jobs, identifying new opportunities or threats only requires an intuitive ability to judge how best to focus their future endeavours. Where intuition is lacking, one approach is to evaluate the potential influence of those factors which might determine whether a new technology will be adopted and thereby deliver greater financial reward (Chaston, 2009a). A summary of some of these key influencing variables are presented in Figure 4.3

At the core of Figure 4.3 is the customer. More important is whether a new technology can offer incremental added-value opportunities by satisfying as yet, unidentified needs of new customers (Ibrahim et al., 2008). The Internet provides an excellent example of this scenario. The technology was initially perceived as an alternative promotional medium and, subsequently, a system for supporting more convenient customer purchasing. Hence other than a small number of futurists, few people could have predicted the Internet would have such a wide impact on numerous industrial processes across various market systems whilst also leading to culture shifts involving completely new forms of social behaviour and buying traits (Chaston, 2009b).

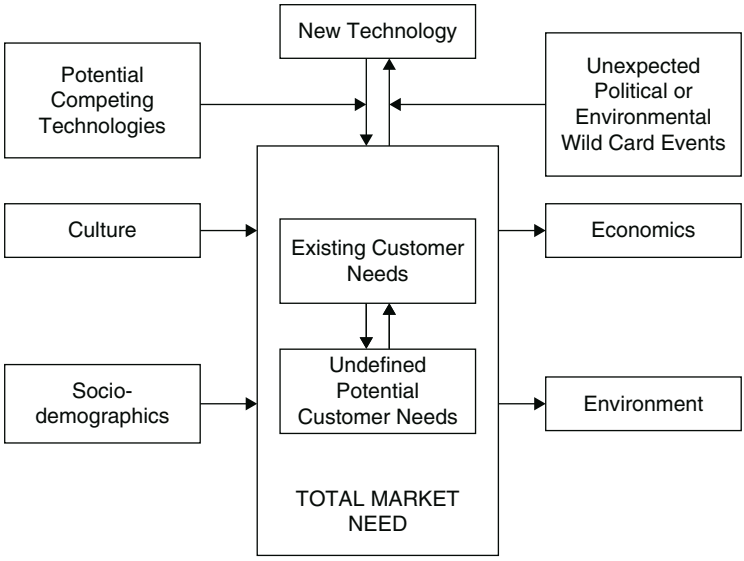

Figure 4.3 Variables influencing the adoption of a new technology

S-curve

Not all customers respond at the same speed in adopting new technology. This behaviour can result in an S-shaped product adoption curve (Ortt and Schoorman, 2004) of the type shown in Figure 4.4. There are three different phases associated with the adoption process. In the 'Development Phase' the new technology is being identified, developed and evolved into a feasible proposition of appeal to potential users. During the 'Early Adoption Phase' the more innovative, risk-taking members of the adopting population are prepared to incorporate the new technology into their ongoing purchasing activities. Once the new technology has clearly demonstrated a benefit, the more conservative elements within the adopting population will commence purchasing because they now perceive there are few risks in also becoming users. Ultimately, all of the later market entrants will have adopted the new technology and the total number of users will plateau.

In assessing the expected shape of the S-curve for a new technology, Brown (1992) proposed that a critical issue is the speed with which the new customers are willing to adopt the new technology. An obstacle confronting the introduction of a new technology is the cost of the

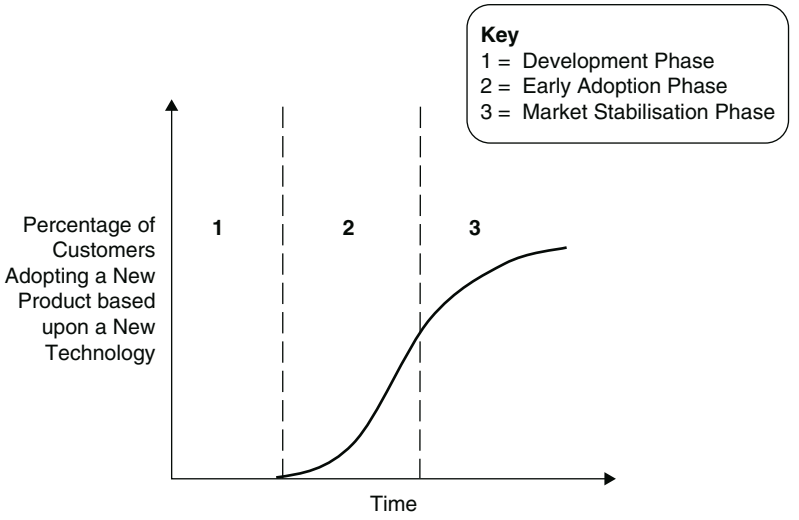

Figure 4.4 The innovation S-curve

new product or service relative to the price of current generation goods available from firms using existing technologies. This is because new technology is often expensive to develop and it may only be feasible to launch the first-generation product by charging a relatively high price. As organisations gain experience with a new technology this usually leads to a decline in production costs which can then permit a price reduction. As prices fall, new customers may enter the market. New firms may enter the market exploiting their capabilities in areas such as managing high-volume production systems or their experience in the marketing of mass-market goods, further forcing prices downwards. Where a reduction in the cost of a technology is not feasible, product prices will remain high and the probable outcome is the number of customers will remain small.

There is very little empirical research concerning the S-curve in the context of the IT industry. One exception is the work undertaken by Sood and Tellis (2005). Their study examined organisations involved in data transfer, computer memory, desktop printers and display monitors. One criteria for selecting a category to be included in the study was the category must have experienced at least two platform innovations. Conventional S-curve theory proposes a new technology will initially deliver poorer performance than existing technology,

but over time the new technology will improve and eventually offer superior performance. Sood and Tellis concluded that evidence for the validity of this theory was not present in the IT industry. The majority of new technologies performed better than old technology and exhibited this capability from the time of initial launch. However, the study showed many new technologies were not an improvement over existing technology and some others enjoyed brief spells of superiority but through innovation the old technology was able to retain market dominance.

The prevailing view in the literature is that new entrepreneurial technologies come primarily from new small-firm market entrants. The researchers were only able to identify one platform innovation involving a new small entrant. In all other cases, platform innovations were introduced by large firms with an approximate 50/50 split between existing large firms and new entry of large firms from another business sector. Although these results are contrary to the dominant view in the literature, they are supported by other research, such as that undertaken by Chandy and Tellis (2000). One possible reason for this situation is that in recent years, innovation in the IT industry has become far more complex, and only large firms have the resources to engage in highly entrepreneurial platform innovation.

Sood and Tellis opined that within the IT industry, using the S-curve to predict the performance of a new technology may be misleading. This is because revenue generation for most technologies does not exhibit an S-shape, with in many cases revenue generation from new entrepreneurial technologies exhibiting a multiple S-shape. This outcome suggests that a technology may exhibit renewed growth after a period of slow or no growth. The risk of utilising the S-curve to forecast future performance may result in the incorrect conclusion that future growth is not feasible, when in fact what is being observed is a period of slow growth which will later be replaced by further rapid growth.

Chasm theory

The 'diffusion of innovation' curve proposes that potential customers can be divided into five groups; namely 'innovators', 'early adopters', 'the early majority', 'the late majority' and 'laggards'. The time taken before a potential customer first purchases a product will depend upon which group the individual is a member of. The initial purchases will be made by innovators, whereas the last individuals to purchase will be the laggards.

In the IT industry, Moore (1991) concluded that the benefits sought by each of these five customer groups are somewhat different. Innovators purchase the product because they wish to own the latest technology, being prepared to accept problems which may exist with the new product. Early adopters must be persuaded that the product will work properly and can offer a new way of fulfilling their vision for exploiting new technology. The early and late majority will postpone purchase until they are persuaded the product offers a functional benefit not provided by existing products. Laggards are price sensitive and wait until the product is virtually obsolete before entering the market.

Moore demonstrated these different needs require the product benefit being offered to be changed as companies seeks to 'cross the chasms' between the five customer types. He posited that unless the product benefit has been revised to reflect different customer needs, then at each phase along the diffusion of innovation curve there is the risk that the product will not appeal to the next group of potential users. This scenario represents both an opportunity and a threat. The threat is that a firm fails to develop an effective new benefit proposition and is unable to cross the next chasm. This outcome then becomes an opportunity for another firm, should this latter organisation be able to deliver the new benefit being sought by the next customer group. Available evidence would suggest that in the context of the Internet industry, this is the reason why many large retailers, although late entrants into online markets, were able to succeed in building a much larger customer base than many of the earlier pure play entrants from the small business sector (Ouyang, 2010).

Disruption theory

In seeking to explain how organisations permit competitors to steal their business by exploiting a new technology, Christensen (1997) used the phrase 'sustained innovation' to describe the orientation of most large corporations towards focusing their R&D efforts on introducing incremental improvements in existing products or organisational processes. The problem with this philosophy is that firms are highly vulnerable to a new player entering the market offering a significantly different product or the introduction of a new, significantly more effective, organisational process (such as Apple's entry into the world of mobile phones).

Paap and Katz (2004) have questioned the conventional theory of large firms' failure being attributed to a lack of recognition of the scale of the threat posed by a new firm entering their market, or the

inadequate speed of their strategic response. They posited that market leaders' desire to respond to changing market circumstances is often constrained by their existing major customers' insistence on their key suppliers concentrating on further improvements being made to existing products. As a result, large firms may tend to focus on product or process innovation which can sustain the company's current market position in terms of staying ahead of other large organisations operating within the same market sector (Demuth, 2008).

The implications of Christensen's theory is that smaller entrepreneurial firms in an existing industry should develop a very different new product or revise internal, organisational processes to offer a desired customer benefit not yet satisfied by the large incumbent market leaders. This approach is known as 'disruptive innovation'. An example of entrepreneurial disruption within the Internet industry was the emergence of the highly successful social networking site, Facebook.

Georgantzasa and Katsamakas (2009) posited that as commoditisation becomes increasingly common in the provision of online services – such as those available in the world of cloud computing and expanded use of open source software – disruption is likely to increase. The success of the disruptive innovation is that the new technology often fills a previously unidentified or unaddressed niche with a value proposition of strong appeal to potential customers whose needs are not met by existing larger suppliers. A disrupter firm's usual initial success comes from offering new products or services in the form of stripped down functionality at a lower price (Lafferty and Edwards, 2004). As illustrated by Lyytinen and Rose's (2003b) study on how Internet computing transforms the practices of software development organisations, once a disruptive innovation has succeeded in penetrating non-consumption and low-end tier segments, the next move is to strengthen the organisation's core business processes and seek to move up-market, targeting the customers of the larger market incumbents.

There appears to be no simple explanation for why successful entrepreneurial firms morph into totally conventional, passive and non-innovative entities. Senior management may have become fixated on believing the strategy which was successful in the past will continue to serve the company well in the future. This is despite market evidence indicating the need to shift to a new strategy capable of sustaining high added-value performance (Slevin and Covin 1990; Amabile et al., 1996). Thus, those market leaders whose preference is to avoid implementing strategic change would do well to reflect on Parnell et al.'s (2005, p. 45) review of corporate failure that concluded that organisational leaders

'should resist the notion that to-day's source of competitive advantage will be eternal'.

Christensen (2000) posited that the diffusion of various forms of digital technologies has acted as a disrupting force, creating new entrepreneurial opportunities for distribution and transformation of knowledge across organisational boundaries. This trend is exemplified by mobile computing and communication technologies being merged to create new services delivered by the Internet. Zittrain (2008) noted that the development of these new online applications does not require extensive knowledge of computer or electronic device hardware. He described this situation as 'generativity', in which technology is easy to distribute and can provide numerous sources of innovation. The modular construction of the PC, the open architecture of the Internet and Google's launch of their Android operating system for mobile phones are examples of generativity.

iPHONE VERSUS ANDROID

Case Aims: To illustrate the concept of generativity in the context of the smartphone market.

Zittrain proposed five principal factors for generativity; namely leverage, adaptability, ease of mastery, accessibility and transferability. To examine generativity, Remland-Wikhamn et al. (2011) analysed the introduction of Apple's iPhone and Google's Android operating system. The iPhone was launched in 2007 and immediately enjoyed significant commercial success. The phone's operating system, iPhone OS, is based on Apple's proprietary software. In terms of permitting applications to run on the product platform, these had to be approved by Apple. In 2008, the company launched a distribution channel named App Store, whereby users of iPhone and iPod could download applications directly to their devices, either for free or for a small fee. At time of launch, the App Store contained 500 third-party applications but within only a short period of time this had increased to 55,000 apps and more than a million downloads by iPhone users.

In 2007, the Open Handset Alliance (OHA) was formed which was constituted of approximately 50 companies from the mobile phone and IT industries. Their shared goal was to develop open standards for mobile devices. Google announced the launch of Android as

a new, open sourced, mobile phone operating system. At the same time, Google expressed a hope that manufacturers who intended to use the operating system would seek to customise and differentiate the features to be offered on their version of a smartphone.

In terms of leverage, both iPhone and Android were aimed at the premium price market segment in order to be able to offer users and application developers high potential for leveraged solutions. The iPhone's advanced built-in technologies and operating system create both an entertainment and a utility device. With Android, several different handheld manufacturers have worked separately or jointly in creating technological features leading to the creation of devices based on different designs and performance parameters. Both the iPhone and Android offer ease of use for external suppliers wishing to add new applications and further exploit the existence of features and sensors, such as touch screen, GPS positioning, camera recorders, WI-FI and various calibration tools. Both systems devices provide common Application Programming Interfaces (APIs) accompanied by standardised instructions and templates for use by application developers.

The Android platform has less compulsory standardised rules compared to the iPhone, thereby providing a freer environment for application developers to work within. Android has focused on stimulating generative aspects by allowing for interaction and information exchange between programmes and databases installed on each mobile device. The possibility for the user to download applications after the device has been shipped extends leverage as a utility and entertainment device; thereby permitting users to customise the phone to fulfil their specific needs.

Adaptability reflects the extent iPhone and Android provide opportunities for the end user to install applications with a wide range of purposes. Apple has maintained a gatekeeping role over iPhone in relation to what applications are allowed into their App Store. This implies a certain degree of censorship over users and application suppliers. With Android, agreement over standards involves all the Open Handset Alliance members. Each handset manufacturer faces the requirement to design new releases of the Open Source operating system for their specific devices. By providing quite a high degree of freedom and adaptability, the system can be applied to other Internet devices such as mini-PCs, computer tablets and televisions. Ease of mastery is linked to features such as user-friendly commands,

clear instructions, plus smooth and fast communication between hardware and software.

Accessibility involves ease of access to technology accompanied by appropriate tools and guidance information. Unlike a PC, which can be modified with new drives and additional memory, mobile phones offer more limited possibilities to add or reconfigure hardware after purchase. Nevertheless, both iPhone and Android are highly accessible for those interested in developing new software. The programming language for the iPhone is Apple's own developed Objective C. This limits the accessibility for new application suppliers who need to learn this different language. Android software is a more open and accessible system, using the open source development platform Eclipse and the widely understood programming language, Java.

Transferability is about how changes in technology can be transferred. A fully transferable technology makes skilled users' adaptations easily transferred and understood by less-skilled users. In the case of hardware development, the iPhone has rather low transferability since Apple is a closed system. Other mobile device manufacturers utilising Android have sought to adopt greater standardisation in relation to hardware. Transferability for Android is further enhanced due the use of Linux and open source software.

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5
Capabilities

Resource based view

The strategic philosophy concerning market success based upon exploiting superior internal capability is known as the 'resource based view of the firm' (or RBV). The RBV literature stresses the importance of an organisation's ability to organise resources to produce goods and services that will permit creation of a competitive advantage. The philosophy can be contrasted with the alternative 'environmentalist perspective', which is focused upon the competitive positioning of products within a market.

Competence is the ability to coordinate the deployment of available assets to permit an organisation to achieve specified strategic goals. Sanchez (1993) suggested that for any activity to be recognised as a competence it must meet the three criteria of organisation, intention and goal attainment. Competence building is any process which leads to changes in existing assets and capabilities or the emergence of new capabilities to improve organisational performance.

Ownership of specific resources does not guarantee attainment of a sustainable competitive advantage (Savory, 2006). To achieve a sustainable advantage the resources must be configured to meet some form of unique market need. Savory proposed this depends upon three abilities:

1. *Competence* – the ability to use resources to achieve an acceptable level of performance.
2. *Capability* – the ability to coordinate a specific combination of resources.
3. *Dynamic capability* – the ability to reconfigure specific resources according to changes in external environments or strategic direction.

The RBV concept assists managers to understand how different internal resources can generate a strategic advantage and permits identification of the most critical resources which are owned by the organisation (Barney, 2001). A core competence can sustain a firm's competitive advantage by acting as an isolating mechanism, creating entry barriers at the level of the individual organisation and mobility barriers at the industry sector level.

Priem and Butler (2001) criticised RBV theory on the grounds that there is a problem of an organisation's strategic advantage being based on causally ambiguous resources. This may occur because managers encounter difficulties determining which combination of capabilities provides the actual basis for achieving strategic advantage. Sveiby (1997) argued that resource advantages are highly contextual, in that a competence may be valuable in one industry but not necessarily valuable in another.

MARKETING COMPETENCE

Case Aims: To illustrate some of the issues confronting marketers in relation to evolving competences to exploit the Internet as a communications platform.

A critical competence required of virtually all organisations is the ability to utilise marketing to sustain effective customer relationships. The Internet is a somewhat different medium than terrestrial channels such as television, radio or print. Spencer and Giles (2001) posited that marketing planning in the early years of an online operation needs to be more rigorous. This is because the Internet can fulfil the role of information provision on a one-to-one, one-to-few or one-to-many basis and offer a new channel for the purchasing and distribution of goods.

The Internet marketing plan will need to include consideration of whether the medium is to be used as an ancillary communications vehicle or become the organisation's primary platform through which to build customer relationships. There is the related issue of whether the online target is the same as for terrestrial campaigns or is to be aimed at difference audiences, such as those who are difficult to reach via more conventional promotional channels.

In determining how to utilise the Internet, the marketer must comprehend the motivation of those individuals to whom the

organisation's online message is to be directed. This is because many online users are utilising the medium for activities not related to the purchasing of products or services (such as communicating with friends, undertaking browser searches, education or obtaining information on topics such as the news, weather and medical knowledge). Without this understanding, problems will be encountered in stimulating online users to view an organisation's advertising on a third-party website or attracting visitors to the organisation's own website.

To ensure an organisation is actually gaining benefit from creating an online presence, Spencer and Giles (2001) recommend the use of pre-testing to assess:

1. Target audience expectations.
2. Appeal of the Internet message.
3. Communication distinctiveness.
4. Ease of website navigation.
5. Reaction to the communication.

Developing appropriate organisational competences in Internet marketing has been complicated because where the online experiences were once constituted of text and graphics, more recently websites have been transformed by the advent of sound, pictures and video-streaming into platforms engaged in webcasting. As a consequence, there is a critical need to provide site visitors with tailored content and continually updated information. The ability to engage in webcasting has changed the ways organisations can communicate with customers, supply chain members and other key external stakeholders. (Javalgi et al., 2004). Exploitation of the Internet usually means the adoption of a multi-channel communications philosophy involving departments other than marketing to manage interactions with customers. This situation has the potential for creating internal organisational conflicts over the nature and content of online Customer Relationship Management (CRM) programmes (Ebner et al., 2002).

In comparing the online activities of UK financial services firms, Hughes (2007) concluded that adding the Internet to an existing market mix has a major impact by causing a fundamental shift in both distribution channels and the nature of service provision portfolios. Changes include customers having much greater access

to information, permitting consumers to make easier comparisons between supplier offerings, supporting a higher level of customer self-service and offering a much lower cost distribution system. Hughes concluded, however, that the Internet can create new marketing problems in terms of determining how best to organise operations to ensure customers are effectively managed across a variety of communications and transactions channels.

Organisational competence

Chaston and Mangles (1997) utilised published studies on competences influencing innovation-based business growth to evolve the qualitative model summarised in Figure 5.1. Eid and Trueman (2004) utilised a similar research methodology to evolve a capability model of the competences required of an organisation seeking to be successful in exploiting the Internet (Figure 5.2). Their model proposed that one critical competence is the ability to identify emerging opportunities and to evolve an effective strategic response. Dulewicz and Higgs (2003) proposed that this competence requires a leadership able to:

1. Define the case for strategic or organisational change.
2. Effectively engage employees in accepting the need for change.
3. Ensure change can occur because employees have an adequate understanding of the relevant issues.
4. Ensure the existence of effective plans and appropriate performance review practices.
5. Ensure employees have the resources, tools and processes to implement change.
6. Continue to engage with employees throughout the entire change process, resolving problems and sustaining commitment.
7. Facilitate the ongoing development of employees' competences through emphasis on organisational learning.

Hofacker (2001) noted that planning capability is critically important in the context of the Internet, because the online world is a radically different operational environment than that previously experienced by managers operating in terrestrial environments. Phan and Slate (2002) identified the critical importance of being able to create and effectively manage a web interface and where relevant, an efficient back-office support system. A key attribute in the model presented in Figure 5.2 is the

requirement of a strategic planning capability to define the necessary actions required to exploit identified opportunities, and the existence of key organisational competences for the effective exploitation of identified opportunities.

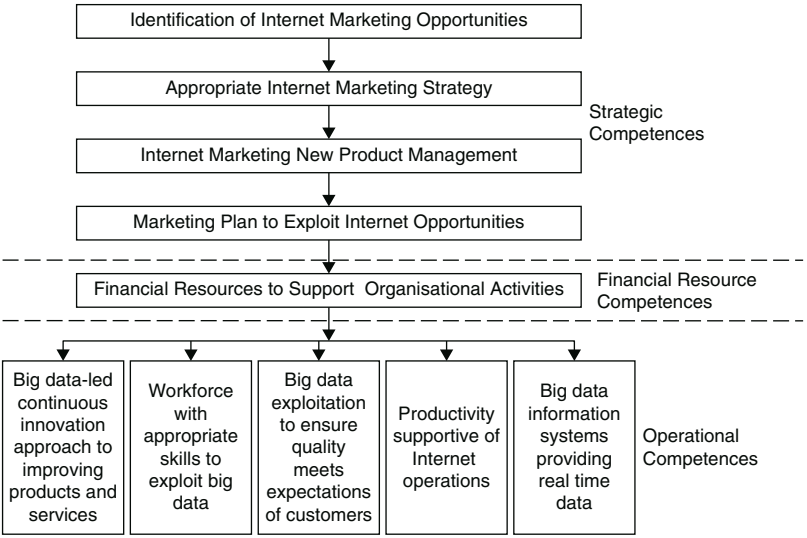

Figure 5.1 A qualitative model of organisational competences

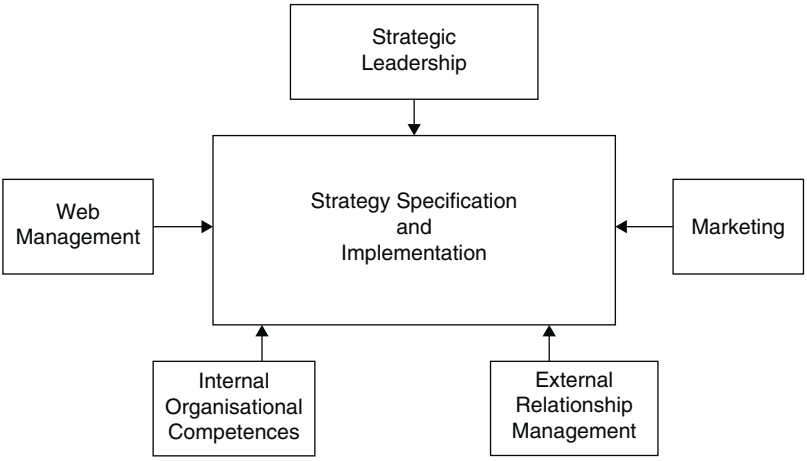

Figure 5.2 Organisational competences

Firms engaged in the provision of services need to achieve superior employee competence in the management of customer relationships. This capability is even more important in an online world (Urbana et al., 2000). Kotzab et al. (2006) concluded that information management was especially critical to firms in seeking to exploit innovation as a strategy for enhancing added-value outcomes within online supply chains. Tanabe and Watanabe (2005) reached similar conclusions about the critical importance of managing information, and concluded effective information management is a competence which provides the basis for achieving competitive advantage.

Exploiting information has been greatly assisted by the advent of lower-cost hardware and software systems that permit high-speed analysis of large quantities of data. In recent years, this technology has led to the emergence of online versions of software systems such as Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) applications (such as SAP and Oracle) (Coltman 2007). Amazon is a leading example of how CRM competence has assisted the company in building a globally successful online brand (Javalgi et al., 2004; Javalgi et al., 2005). To enhance the breadth of the company's offerings, Amazon has introduced an affiliation strategy. This has resulted in other suppliers contributing to the creation of a huge online product catalogue. Amazon achieves an additional sense of community with consumers by providing shared buyer experiences in the form of customer feedback and recommendations, based on analysing individual customers purchase patterns.

PROCUREMENT COMPETENCE

Case Aims: To illustrate the benefits conferred by exploiting the Internet to enhance the purchase of products and services by manufacturers.

The literature concerning organisational competence in the exploitation of the Internet tends to focus on downstream activities and outcomes, such as cost savings achieved through creating online transaction sites. Real-world reality is somewhat different, with firms such as Dell, IBM, and Cisco achieving equally impressive performance improvements by adopting Internet-enabled procurement solutions.

There are two distinct aspects of e-procurement (Monczka et al., 2002). One is to undertake online searches to locate new sources of

supply. The other is to participate in e-procurement, which often results in lowering the costs of acquired goods at lower prices and permits a streamlining of the ordering and delivery processes.

Mishra et al. (2007) studied over 400 US manufacturing firms and concluded that many firms had achieved significant process efficiencies and cost savings from developing the necessary competences to use the Internet for procurement. These firms perceived using the Internet for searching for potential supply sources and the online procurement process as two different processes. Some firms relied upon the Internet primarily as a search tool, whereas others used the technology to manage their procurement activities. Where the Internet is used to make purchases of products or services, this had a significant impact on organisational effectiveness and efficiency.

The researchers determined that reliance on the Internet as a search tool is a strong predictor of subsequent use in ordering. As firms become competent in the exploitation of the Internet, expanding the use of online technology becomes accepted as a way for implementing new, innovative ways of enhancing internal value-added processes. Prior involvement in exploiting IT in terrestrial operations is also a major influence over the speed with which firms use the Internet to automate their procurement activities (Barua et al., 2004).

Knowledge competence

The current rapid pace of new knowledge creation can be expected to accelerate during the balance of the 21st century, with exploitation of new knowledge being an increasingly critical competence to sustain growth (Sheehan, 2005). Prahalad and Hamel (1990) perceived knowledge management as an ability to utilise collective learning to permit coordination of a diverse range of production skills and integration of a multiple stream of technologies.

Key attributes of strategic assets are being valuable, rare, non-substitutable and inimitable. Michalisin et al. (2000) postulated that strategic assets are also intangible and the only assets which fulfil all these criteria are employee knowledge, organisational reputation and organisational culture. Knowledge is best used to enhance added-value activities by creating superior products or services. Kaplan and Norton (2004) introduced the concept of 'strategy maps' to provide

a framework for linking strategy, activities and knowledge resources. A key component are 'strategic themes', which Kaplan and Norton describe as 'the drivers of knowledge-based strategy'. Themes involve combining skills, technologies and organisational culture to create internal processes that deliver tangible outcomes, such as customer satisfaction, customer loyalty, growth or increased profitability. The relative importance of these themes will vary between organisations (Massingham, 2004).

Existing knowledge is rarely able to support radical, innovative new ideas. As a consequence entrepreneurial organisations have long understood the importance of the exploitation of new knowledge. The implications of existing versus new knowledge as sources of opportunity are summarised in Figure 5.3.

Firms exploiting new technology tend to be attracted to leading-edge technology. This provides the basis for above average business performance through the creation of new products and in some cases, entirely new industries. Hence in terms of analysing future opportunities and threats, it is necessary to assess how new knowledge can best be exploited by combining new knowledge with the current leading edge technology (Ohmura and Watanabe, 2006). Kotzab et al. (2006) and Tanabe and Watanabe (2005) concluded that information management is especially critical to firms seeking to exploit innovation as a strategy for enhancing added-value outcomes within the supply chains.

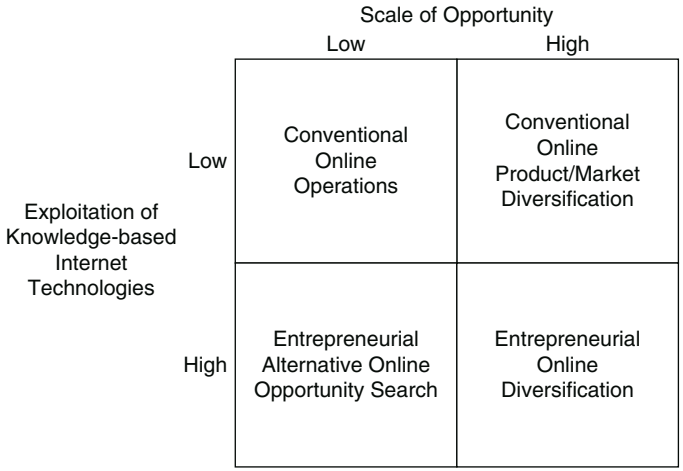

Figure 5.3 Opportunity/knowledge mix

Lower-cost hardware and software systems permit high-speed analysis of large quantities of data, leading to the emergence of improved integrated CRM and ERP applications (Coltman, 2007).

RETAIL KNOWLEDGE COMPETENCE

Case Aims: To illustrate the nature and benefits of utilising online technology to create a knowledge-based management system.

A major US retailer, Giant Eagle, identified the need to redefine both business vision and the systems whereby employees could access and exploit knowledge (Smith, 2008). A key requirement was that knowledge should be available on a 24/7 basis, using an Internet-based system to link together 130 corporate and 84 independently-owned stores.

A major component of the Giant Eagle knowledge management system is the company's data warehouse system. Each retail store produces customer and transactional data. The challenge facing Giant Eagle was making sure information is in a form which can be utilised in decision-making. As recommended by Smith and Offodile (2007) a new, well-designed data warehouse system permits employees to use the same query language for access and timely analysis of key information.

Giant Eagle's data flows are derived from a large number of different locations and different data types. The company's Advantage Card loyalty programme provides shopper data and supports customised promotional offers. Another data source is the Giant Eagle website. At the store level, data is captured at the point of sale. Additional data entry points on the receiving docks permit order accuracy verification and map the flow of stock from the warehouse to retail outlets. Combining data from all sources ensures management are in a much better position in relation to forecasting sales, ordering product and controlling operational expenses.

Logistics

Murillo (2001) concluded that management of online transactions requires ownership of a number of complementary assets to create an effective logistics system. These may include computers, Internet

platforms and sometimes use of satellite technology. The pressure to optimise logistics has been increased because selling online means companies need to manage small orders size, handle increasing volumes on a 24/7 basis and, in some cases, guarantee same-day deliveries. Research on logistics has demonstrated a close link between capability and competitive advantage, as well as enhancing revenue generation and reducing operating costs (Zhao et al., 2001).

The external provision of logistics services is not unique to online markets, but instead reflects a growing trend by terrestrial manufacturers, distributors and retailers to delegate this responsibility to 3PL providers. Langley et al. (1999, p. 91) defined a 3PL provider as a company that 'provides multiple logistics services for its customers'. There is variation in the nature of the logistics services that a firm may outsource. Activities such as outbound transportation, freight bill auditing/payment, warehousing, inbound transportation and freight consolidation/distribution are the most frequently outsourced services (Lieb, 2002). Other major outsourcing now includes cross-docking, minor manufacturing activities, product returns, marketing/labelling/packaging and traffic management/fleet operations. Cho et al. (2008) noted some large-scale online operations have outsourced management of their entire supply chain to one or more 3PLs. The presumed logic is that this enhances performance by leveraging the third-party's expertise in order management and fulfilment.

The capabilities associated with effective logistics operations include (Morash et al., 1996; Cho et al., 2008):

1. Provision of pre-sale services to assist online purchase decisions.
2. Post-sale services to ensure ongoing customer satisfaction.
3. Delivery speed designed to minimise time between order acceptance and delivery.
4. Service reliability in order to achieve accuracy and meet delivery dates.
5. Responsiveness in terms of being able to handle highly variable order patterns.
6. Effective communication to ensure customers are kept informed.
7. Online-integrated order management systems, linking the activities of the supplier and 3PL organisations.
8. Adequate geographic coverage to cover the needs of all customers, with in many cases a global distribution capability.
9. Low distribution costs to compete effectively with terrestrial suppliers.

PEAPOD VERSUS WEBVAN

Case Aims: To illustrate how different strategic and logistics philosophies can influence the success of online retailers.

To gain an understanding of the factors influencing success and failure in the online grocery business, Lunce et al. (2006) undertook a comparative study in the US market. They noted that in 2000 there existed a number of apparently healthy, pure play Internet grocery companies, but soon only Webvan and Peapod had survived. Five years later only Peapod remained.

Peapod's primary customer base is female, aged between 30 and 54, from a dual income household with children. From the outset, the company charged a delivery fee of $9.95 for orders up to $75, and $4.95 for larger orders, and instituted a minimum order size of $50. This strategy assisted Peapod in generating larger orders and lower transaction costs per order. Webvan entered the market offering lower delivery fees and was then twice forced to increase delivery fees. This broke the fundamental rule of businesses of being consistent, thus reducing customer trust and discouraging potential customers.

Peapod used interactive technology to permit each customer to create a virtual purchasing environment best suited to their shopping needs, and used customer knowledge to further upgrade service quality. A key reason for this was one of Peapod's owners was an experienced, long-established, traditional grocery retailer; whereas Webvan was launched by a member of the Borders bookstore family.

Initially, Webvan's supply chain was designed to maximise customer flexibility. This necessitated significant investment in supply chain infrastructure but this system lacked the capability to be modified in light of new knowledge concerning customer needs. The company was unable to adapt to changing customer needs. Had Webvan postponed their investment in technology until their business model had been validated and their logistics system evaluated in a pilot operation, the company's chances of survival would have been much greater (Platoni, 2001).

Peapod's strategy was to appeal to a market niche demanding immediate delivery and high product line variety, and over time expanding market coverage to attract more online shoppers. With customers demanding immediate delivery, Peapod reduced delivery times by upgrading their logistics systems. Peapod also focused on

building strong relationships with customers. This was reflected in the decision to call their delivery drivers 'Ambassadors'.

Lunce et al. concluded that here were a number of factors contributing to the survival of Peapod and the demise of Webvan. One area of difference was that Peapod exploited interaction with customers to develop and enhance the company's reputation as a high-quality supplier of grocery products. In contrast, Webvan failed to recognise that the needs of potential and actual customers required ongoing changes in strategy and operational processes. Webvan relied upon their own expertise which resulted in the creation of a highly expensive online service platform. In contrast, Peapod built external alliances to host their distribution system; thereby remaining freer to focus on customer relation management and achieve lower operating costs by expanding their technology gradually at a pace reflective of the growing needs of their customer base.

Process automation capability

The advent of the computer in the 1950s was perceived as a technology promising major advances in organisational productivity. Computer Numerically Controlled (CNC) machine tools and the introduction of robots onto production lines rapidly changed the face of many industries. Based upon the ability of the computer to tirelessly acquire, store and process data, the view of the computer industry was that IT offered even greater productivity enhancement within service firms and, potentially, the creation of new service propositions. This expectation, however, was not followed by actual events. Although service firms have embraced IT, the move has not been accompanied by significant improvement in productivity or the launch of many radically new products (Siemens, 2013).

It was not until the 21st century that the necessary advances were all in place across computing, electronic communications and exploitation of the Internet to permit the implementation of what has been labelled as the 'Smart Age' (Wright and Dawood, 2009; Anon., 2010). As summarised in Figure 5.4, the arrival of the Smart Age means service organisations need to determine whether they have, or need to develop, internal competences capable of exploiting the new sources of opportunity to improve product or service provision. One opportunity is acquiring real-time data about customers for use in development of new or improved products or services, and to support more accurate

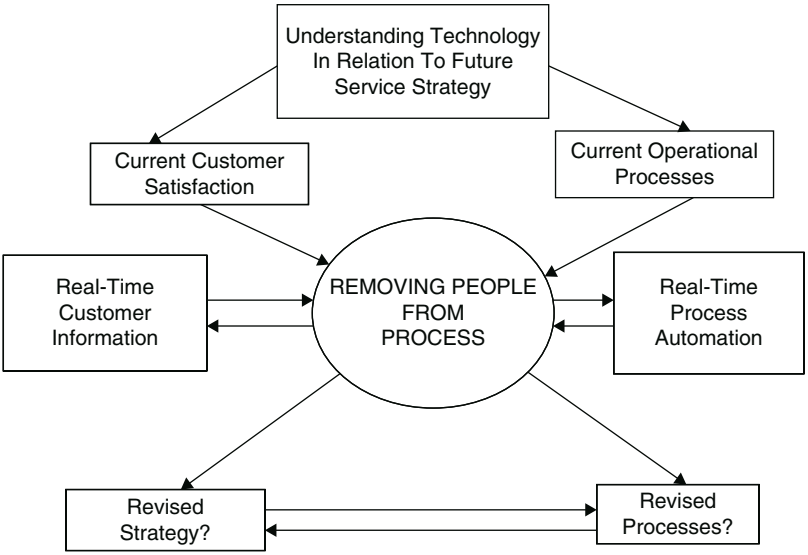

Figure 5.4 Planning people removal

customer targeting. Another opportunity is smart products which offer new services to customers while concurrently sustaining performance of existing products. A third opportunity is to access real-time data about all aspects of internal organisational processes to rapidly determine how processes might be improved and provide early warning of developing performance problems before these have an adverse impact.

In relation to the exploitation of smart technology, the outcome can be of the following types:

1. *Tangible applications* – where the technology is used to enhance the customer's service experience through either improving performance or reducing costs.
2. *Information applications* – where the technology is used to enhance information available to the user.
3. *Layered applications* – where the technology is used to direct the user to another knowledge source or assists in supporting a superior purchase outcome.

To exploit advances in technology while evolving new paradigms, service firms must comprehend the nature of the latest advances in digital

technologies and how these can provide the basis for implementing fundamental organisational change. The problem facing many service operations, especially those in more mature industries such as retailing or banking and also within the public sector, is senior management lack sufficient technological knowledge to determine whether the latest advances can deliver the cost/benefit outcomes being claimed. In some cases, the assessment process is complicated because in the early stages of a new development, not even the developers can be certain their innovation can be evolved into a genuinely feasible solution or alternatively, what will be the total cost of converting a pilot project into a full scale commercial system (Waters, 2013).

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6
i-Strategies

Strategy formulation

Mintzberg (1990) concluded that strategy evolves gradually over time as managers acquire a deeper understanding of the factors influencing success. Mintzberg's (1999) typology for this type of strategic behaviour is the 'Learning School'. His criticism of the conventional linear sequential planning approach, which he described as the 'Design School', is that this involves the specification of a deliberate, detailed strategy which he does not believe remains a feasible proposition in today's increasingly uncertain world.

The majority of students and managers from Western countries tend to be rational, logical thinkers who prefer to reach a conclusion based upon quantitative analysis of the variables impacting organisational performance. As a consequence, these individuals, despite articulated criticisms of process weakness, still tend to favour a thinking style which is reflective of the Design School approach to strategy formulation.

Whichever strategic planning philosophy is preferred, in terms of deciding upon an i-Strategy as summarised in Figure 6.1, an organisation will need to assess the potential impact of the three key variables of marketing opportunity, technology and internal capability. The assessment will need to be undertaken not just by firms heavily involved in exploiting the Internet, but also other organisations for whom the Internet offers new ways of managing their mainly terrestrial operations.

In selecting an i-Strategy, Eisenmann's (2006) analysis of strategic options suggests, as summarised in Figure 6.2, organisations could consider the following options:

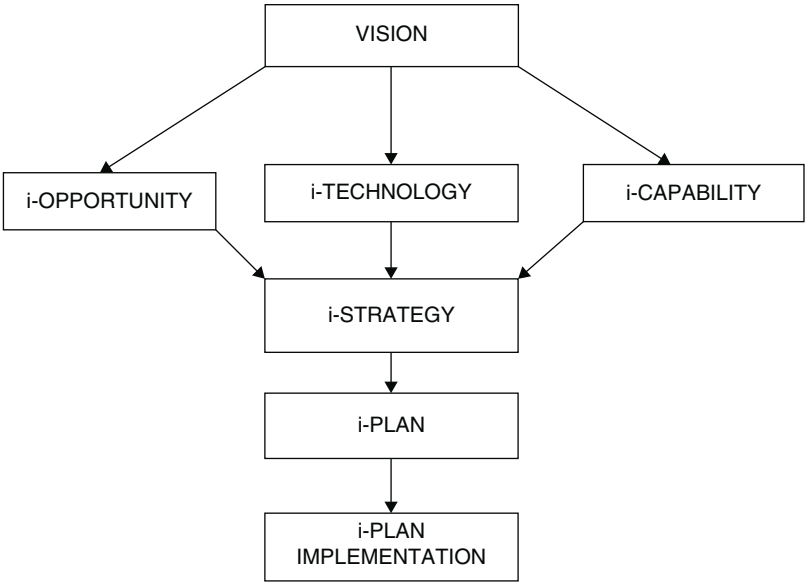

Figure 6.1 i-Strategy planning model

1. Retain the current strategy and utilise the Internet to enhance existing operations.
2. Retain the current strategy and utilise the Internet to expand existing operations by activities such as exploiting online technology to enter new markets or expand customer coverage in existing markets.
3. Redefine strategy as the basis for enhancing existing operations by exploiting the Internet to undertake activities such as moving from a terrestrial to an entirely online system for managing supply chains.
4. Redefine strategy by exploiting the Internet to introduce new products or enter new markets.

Treacy and Wiersema (1995) proposed that strategies should reflect some firms having moved from transactional to relationship marketing. As illustrated in Figure 6.2, Chaston (1999) expanded the original Treacy and Wiersema model by adding the option of competing on the basis of superior value/lower price.

With the arrival of big data and cloud computing, all organisations need to reassess their marketing strategies in relation to how increased real-time knowledge can influence achievement of the organisation's long-term performance goals. Most organisations operate in markets

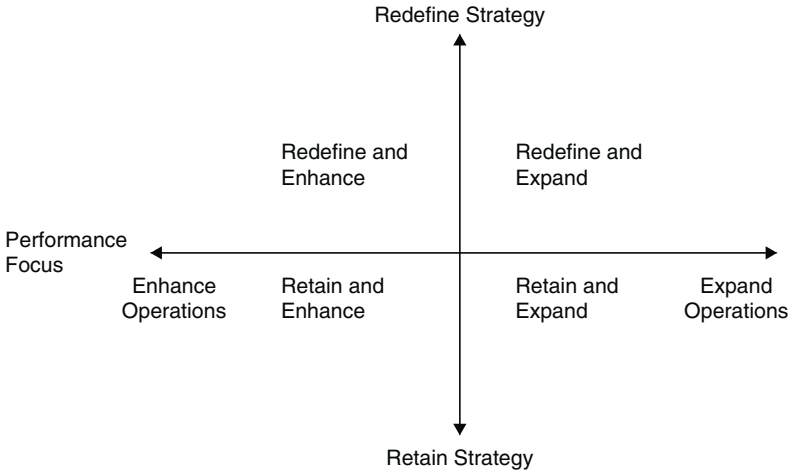

Figure 6.2 i-Strategy options

where the nature of the customer and product/service proposition determines whether a transactional or a relationship marketing orientation is most appropriate. The arrival of the Internet rarely caused organisations to revise their orientation in relation to their response to customer needs and purchasing behaviour. The same scenario can be expected to be sustained as organisations assess how more in-depth market knowledge might impact future marketing strategies. This conclusion suggests that strategy revisions will probably be of the type proposed in Figure 6.3.

Kanungo (2003) suggested that for an effective i-Strategy, strategic positioning must be based upon an organisational process model in which operations are undertaken in a digital, online space and with the aim of optimising the exploitation of electronic information. A related requirement is that Internet business models must have the attributes of reliability, scalability and permit easy incorporation of advances in technology (Hackbarth and Kettinger, 2000).

In many situations, these aims require organisations to create an open interface infrastructure which can permit the rapid incorporation of new applications and services. Through the adoption of open standards this ensures universal connectivity, which allows customers and other supply chain members to access the organisation without encountering data exchange incompatibilities. Interface compatibility enhances initiatives such as customer relationships, supply chain management and acquisition of real-time business intelligence from multiple data sources (Sharma and Gupta, 2004).

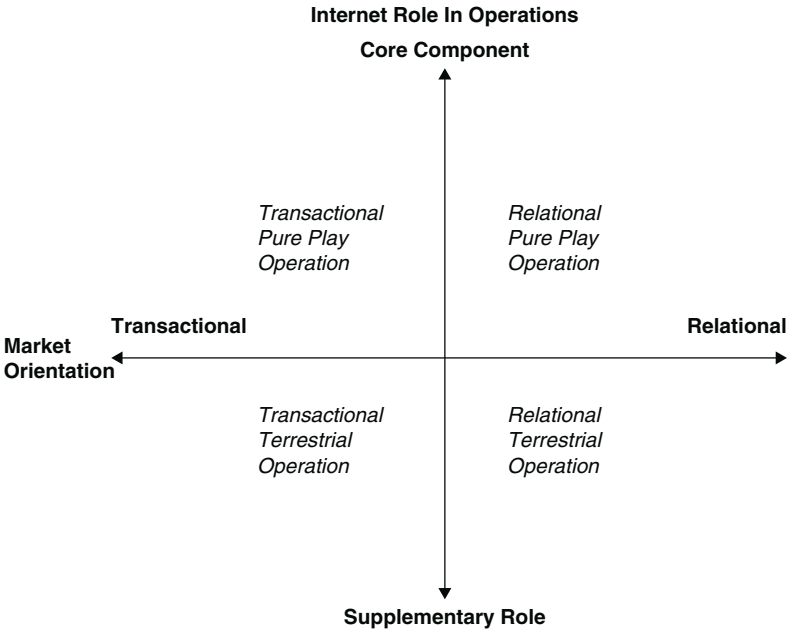

Figure 6.3 Strategic options

RETAIN AND ENHANCE

Case Aims: To illustrate how one major corporation has retained the same strategy but exploited the Internet to enhance operations.

The US electronics industry has provided the source of most of the innovations which have driven the global electronics industry over the years. Intel is possibly one of the longest-running success stories. The company's initial success was as a market leader in DRAM chip at the beginning of the 1970s. Within only a few years, numerous competitors had entered the market, with the Japanese using aggressive marketing and pricing policies to gain a dominant position in the manufacture of DRAMs. By the mid-1980s, Intel had decided that sustaining profitability in what had become a commoditised industry was impossible and withdrew from the industry. The company focused upon becoming the leading innovator in the development and supply of microprocessors (Afuah, 1999).

The company strategy remained that of using innovation to become a leader within the electronics industry. Intel's CEO, Andy Grove, led

the company's move into microprocessors because the company recognised that microprocessors would become increasingly important as PC manufacturers sought to add processing speed and data storage capacity to their next generation products. In the mid-1990s, Intel invested $13.5 billion in plant, property and equipment, and Intel's chips became used by virtually all major PC manufacturers. Market leadership permitted the company to dictate the pace of strategic change that other players such as customers, competitors, suppliers and software developers had to follow (Burgelman, 2002).

The company positioning as a key supplier of leading edge technology chips has been assisted by achieving scale and agility through the ownership of a network of fabrication and assembly operations. Intel was also one of the first major organisations to recognise that the Internet offered new ways of enhancing their internal operations. In 1998, Intel launched a global online ordering system with the stated aim of becoming a '100 percent e-corporation'. By 2006, over 85 per cent of revenue was being generated from online sales and virtually all Intel customers interact with the company via the Internet (Sammon and Handley, 2007).

Intel was possibly slow to recognise potential market demand for new chips for mobile Internet devices which require adequate data processing capacity but low power consumption. Consequently, specialist chip designers such as UK's Arm Holdings have been able to gain a dominant position in this market sector. The situation has forced Intel to significantly increase R&D expenditure on low power usage chips with the aim of recapturing lost share for such products.

Sustaining innovation

In the age of the Internet, Moore's Law, which states computing power and speed doubles every 18 months, has led to the life of products being dramatically shortened. Firms are being forced to regularly re-examine existing strategies as new technology dramatically alters market dynamics and the ongoing sustainability of current business models.

Hamel and Skarzynski (2001) posited that in today's market environment, organisations must accept the following realities:

1. *Commoditisation is inevitable* – every new product or service will become a commodity and the speed at which this occurs is much higher than in the past.

2. *Uncertainty over forecasting futures* – due to the rapidly changing nature of technology.
3. *The risk of assuming past achievements can be repeated* – firms which have been innovators in the past cannot rely upon these capabilities to guarantee future success.
4. *Recognise that innovation often relies on new insight* – actions have to be implemented to trigger completely new ways of thinking.
5. *Avoid organisational myopia* – going beyond relying upon internal sources of new ideas and seeking inputs from external sources.
6. *Sustain commitment to innovation* – encouraging everybody to direct their energies towards exploiting new opportunities.

CLOCKSPEED

Case Aims: To illustrate how innovation varies between industries.

Fines (1998) introduced the concept of industry 'clockspeed' to capture the rate of industry change. He proposed three dimensions of clockspeed; namely product, internal processes and organisational environments. Product clockspeed represents the rate at which new product introduction occurs and existing products are rendered obsolete. Organisational environmental clockspeed reflects the rate of change in the strategic activities such as mergers, acquisitions and inter-organizational alliances. Industry clockspeed describes the rate of industry change.

Nadkarni and Narayanan (2007) suggested that as technology becomes more complex, firms in high clockspeed sectors are required to exhibit a higher level of strategic flexibility. This can be contrasted with slower clockspeed sectors where organisational focus tends to be orientated towards strategic persistence. Differences in this aspect of strategic behaviour are present in the IT industry. In the relatively long-established PC and laptop sector, the primary focus for some years has been that of seeking ways of improving processing speeds, enhancing memory capacity and lowering prices. In contrast, in the mobile device sector, manufacturers are still experimenting with different technologies. The focus of innovation is exploiting new technology to provide the basis of a superior benefit claim.

Big data

In determining whether the firm is able to survive in a world of big data, there is a need to consider (Brown et al., 2011):

1. What happens in a world of radical transparency, with data widely available?
2. Will this change the nature of competition?
3. Will the business strategy involve big data real-time customisation?
4. Augment management decisions?
5. Can big data lead to the creation of a new business model?

In assessing the potential of big data to enhance future performance, Bughin et al. (2011) proposed that the following key issues need consideration:

1. Opportunity or threat.
2. Understanding data availability.
3. Data utilisation.
4. Understanding internal implications.

BIG DATA OPPORTUNITIES

Case Aims: To examine how big data may offer new market opportunities.

In assessing how big data can influence future strategy, Piccoli and Pigni (2013) have proposed the following opportunities:

1. *Real-time sensing* – offering added value by the product to assist the user's consumption experience.
2. *Real-time mass visibility* – by consolidating the data from a large number of customers to offer new assistance.
3. *Real-time experimentation* – utilising real-time data to revise marketing activities such as price or sales promotions.
4. *Real-time co-ordination* – assisting customers by using real-time information to enhance decision-making.

Co-creation

The Internet influences innovation strategies in three ways; sustaining existing services, supporting incremental service strategies and radical service innovation (Möller et al., 2008). Sustaining existing services

usually requires providers to focus on operational efficiency. An example of this approach is provided by Dell, where retention of market leadership following the advent of the Internet was to migrate from other direct selling techniques such as telephone selling and mail orders to an integrated online order taking/customer services management system.

Co-creation involving customers is achievable in B2C and B2B markets. In co-creation, it is necessary for all parties to receive enhanced value from the process. Delivering value creation is not simply the implementation of a project. The participants need to understand the opportunities to create value, translate the idea into a tangible outcome and effectively orchestrate the participants to deliver the mutual benefits (Senn et al., 2013).

Incremental service innovation involves a philosophy of seeking new ways through which to add value to the benefit proposition (Yannopoulos, 2011). The core proposition remains the same, the focus is upon adding new services which offer incremental value. An example of this philosophy in the world of the Internet is provided by Google. The company is recognised as the world's best search service provider on the web. To retain market leadership the company has introduced additional search services for specific clients groups such as advertisers, content publishers and market researchers.

Radical service innovation involves 'new to the world' propositions which will dramatically alter the nature of the markets being served. The initiators of this type of innovation are usually dependent upon exploiting a new technology. An Internet industry example is provided by Apple, which radically altered the ways customers could connect with a whole range of web services through their launch of the iPod, iPhone and iPad.

Möller et al. (2008) identified two distinct approaches to collaboration which they labelled as 'provider-driven' and 'customer-driven'. The risks associated with provider- or customer-driven innovation caused Möller et al. to propose a more optimal solution is 'congruent innovation'. This involves both the supplier and the customer exhibiting similar preferences in relation to preferring sustained, incremental or radical innovation. As summarised in Figure 6.4, congruence occurs when both parties share the same perspectives (Berthon et al., 1999).

Skype is an example of congruent innovation. The original concept involved utilising the Internet to permit people unlimited free voice and video communication via the Internet. Having developed the product idea, the founder of Skype, Niklas Zennström, sought the views of potential and existing customers to develop an optimal proposition. Only a few years after launch, the company attracted over 75 million customers from B2C and B2B markets speaking 27 different languages.

Customer Innovation Orientation \ Supplier Innovation Orientation	Sustained Innovation	Incremental Innovation	Radical Innovation
Sustained Innovation	Compatible Orientation	Unbalanced Orientation	Incompatible Orientation
Incremental Innovation	Unbalanced Orientation	Compatible Orientation	Unbalanced Orientation
Radical Innovation	Incompatible Orientation	Unbalanced Orientation	Compatible Orientation

Figure 6.4 Co-creation innovation matrix

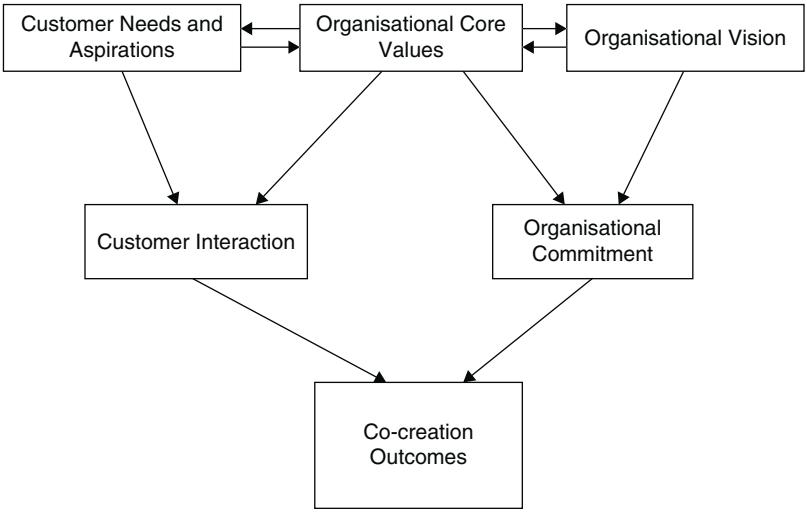

Figure 6.5 Co-creation interaction

Ensuring congruent innovation is mutually beneficial there is a need to achieve compatibility between customer needs, the core values of the organisation and the organisation's future vision (Edgeman and Eskildsen, 2012). As summarised in Figure 6.5, this leads to enhanced customer interaction and increased commitment.

STAYING AHEAD

Case Aims: To illustrate how a firm must rely on innovation to survive in the face of commoditisation.

In seeking a new direction, most organisations would be wise to examine which internal competences will provide the basis for successfully redirecting future actions. An example of the effectiveness of this approach is provided by the Taiwanese microchip manufacturer, MediaTek (Anon., 2009). The company was founded in 1997 as a 'fabless' chipmaker. The business model was that of designing specialist microchips and sub-contracting the actual manufacturing of products to other firms. The company strategy was to utilise in-house technological skills to develop premium-priced, high-quality components. The company's first generation of products were microchips for CD-ROM drives. Expertise acquired permitted a move into designing microchips which are core elements in other consumer electronic products and the company has become the global market leader in the supply of microchips for DVD players.

Within only a few years, MediaTek faced intense price competition from companies based in countries such as mainland China. The commoditisation of the firm's core business required the identification and implementation of a new generation of microchip products. In 2004, the company moved into the higher margin market of making 'chipsets'. These are bundles of microchips which provide the basis of the operating system in mobile telephones. As a latecomer into this industry MediaTek focused on the design of microchips which could be pre-programmed; thereby providing the phone manufacturers with a 'total solution' which significantly reduced the development and assembly times for new telephones. The approach revolutionised the Chinese mobile telephone market. Previously a handset manufacturer required approximately $3 million, 100 engineers and nine months of development time to bring a new product to market. MediaTek's bundled solution permits firms to develop a new product in three months, using only ten engineers and expenditure in the region of $100,000. MediaTek is now the third largest fabless microchip producer in the world. Although all of the company's current generation of products are used in the low-end sector of the telephone market, the firm is planning to become the market leader in the supply of chipsets for smartphones.

Mobile markets

The advent of mobile wireless communications technology has significantly expanded the opportunities for utilising the Internet to undertake business functions and provide new ways of communicating with customers or supply chain members. These new opportunities have impacted a number of industry sectors (Feldman, 2002). One dimension of impact is the hybridisation of online and offline media environments, which when coupled with audio and visual data transmission, greatly enhances the Internet as a media rich communications channel. Various capabilities and functions have been integrated into mobile communications services such as voice services and Short Message Services (SMS). Real-time data can be made available, such as stock quotes, weather reports or traffic information. Data is provided by media companies like Reuters, the *Financial Times* and the BBC, plus content aggregators such as Yahoo. There are, however, some limitations in relation to utilising mobile devices, such as the limited size of the onscreen display (Valletti, 1999).

As Internet service providers gain experience in the most effective ways of increasing market share it can be expected to lead to changes in strategies and strategic positioning. One strategy is that of the online provider making available all of the services required by a customer – including e-mail, broadband, access to media channels and the ability to download DVDs. The online activities of customers offer providers with access to real-time data on customer activities, which can be analysed and permit the provider to develop customised service offerings. Also, a number of telecoms and media firms are entering into strategic alliances with credit card companies, banks and retailers to exploit the mutual benefits of accessing real-time customer behaviour data (Raghu et al., 2002).

Predicting which strategies will optimise financial performance in a mobile online world remains difficult. This is because the rapidly changing nature of online markets means no dominant business model has yet emerged. The advertising model used in terrestrial media markets, based upon revenue from advertising, has not yet proved successful for organisations such as *The Wall Street Journal*, which has moved online. In part, this reflects inadequate evidence concerning the degree to which online mobile advertising can complement or replace long-established terrestrial promotional channels. The lack of definite knowledge may result in more publishers syndicating their existing content to third-party portals, such as those operated by companies such as British Telecom and Deutsche Telecom (Werbach, 2000).

M-MOBILE MARKETING

Case Aims: To illustrate how mobile technology is altering the nature of online marketing.

The advent of m-technology has created a new source of real-time data which may assist in determining appropriate market positioning for organisations. Ju-Young and Johnson (2013) examined the interrelationship among the m-consumers' personality traits, m-communication, m-distribution, and m-accessibility utilities and their willingness to use m-shops. Their results verified theoretical concepts regarding personality traits and their effects on m-channel utilities and willingness to m-shop, plus they provided insights into the implementation and development of m-shopping.

Their results suggested m-communication and m-accessibility were key factors in predicting willingness to m-shop. M-consumers who perceived a low level of m-distribution utility were still likely to be willing to m-shop. This suggests that consumers who are willing to m-shop may accept the disadvantages of m-distribution utility, such as no pre-purchase inspection and issues of security associated with online payment. The researchers recommend that in order to enhance the m-shopping web's m-communication utility, m-providers need to offer a broader assortment of m-merchandise accompanied by continuous updating of the service proposition and evidence of a commitment to quality.

The study indicated that m-retailers need to fulfil m-consumers' desire for variety, sociability and sensory excitement by offering diverse mobile web functions and promotional campaigns. This can be achieved by utilising a diversity of sales promotions, blogs featuring social shopping experiences, m-coupons, m-loyalty programmes and pop-up m-store special events/incentives.

Platform strategies

'Platform leaders' are those companies that drive industry-wide innovation. 'Complementors' are those companies that make ancillary products which expand a platform's markets (Cusumano and Cawer, 2002). The potential to become a platform leader exists at all levels throughout the Internet industry – from hardware through to apps and website content provision. Having achieved market leadership, platform leaders face three problems. First is maintaining the integrity of

the platform in the face of future technological change. Second is determining the advisability of letting the platform evolve technologically whilst maintaining compatibility with past complementors' products or services. Third is how to maintain platform leadership. Evidence would suggest that emphasis on tracking changing customer needs, accompanied by working closer with other organisations also engaged in exploiting the Internet, is the best way to effectively sustain customer loyalty.

Cusumano and Cawer proposed that there are the following four dimensions to market leadership:

1. *Scope* – the amount of innovation the company undertakes internally and how much outsiders are encouraged to collaborate in the development of new products or services.
2. *Product technology decisions* – concerning platform architecture and the degree to which knowledge of technology is made available to others.
3. *Relationships with external complementors* – involving achieving consensus with complementors and handling potential conflicts of interest.
4. *Internal organisational structures* – ensuring platform developers are able to handle objections and problems that can arise.

Platform interface design can have a profound impact on the nature of future follow-on innovation. Platform leaders need to simultaneously pursue two objectives. First, there is achieving consensuss among key complementors over technical specifications and standards. Second, is influencing customers and complementors' decisions in relation to the focus required in the development of the next generation of products (Dehkordi et al., 2012).

PLATFORM ERRORS

Case Aims: To illustrate the potential problems of relying for too long on a platform.

The owner of the world's first computer industry global platform was IBM, which introduced their 360 mainframe in the mid-1960s. Eventually, anti-trust initiatives instigated by the US Federal government forced IBM to release information to other members of the computer industry; thereby permitting hardware 'clone makers'

such as Amdahl and Fujitsu to enter the market. The company subsequently faced the dilemma that a belated entry into the PC market blocked any ability to achieve platform ownership in this new sector and ownership for the operating system and microprocessors were ceded to the company's key suppliers, Microsoft and Intel. By the early 1990s, IBM had become a highly troubled company. The solution, under the new CEO, Louis Gerstner, was to become the champion of open systems such as Linux and Java, whilst concurrently repositioning the company from being a 'box supplier' to being the leading source of expertise for customers seeking advanced data management services (Cusumano, 2011).

In the age of the Internet, the strategic issue still remains that of whether a single company can achieve platform leadership and having achieved this goal, whether emphasis on retaining ownership can eventually be the company's downfall. One such example of this scenario is the Finnish company, Nokia, which for many years has been the dominant player in the mobile phone industry through reliance upon their proprietary Symbian software operating system. Unfortunately, this software is non-functional in the context of smartphones and Nokia was very slow in developing a new more effective platform. As a consequence the company's mobile phone sales have been severely eroded by smartphones.

Open technology

Technology platforms are the hub of the value chains in high technology industries. Some examples of 'closed' technology platforms are Microsoft Windows, Intel processors and the Sony PlayStation game consoles. By utilising closed systems, a platform leader can control applications to be added to the platform; thereby sustaining domination over industry standards (Economides and Katsamakas, 2006).

'Open' systems permit other firms to utilise a developer's software platform. An example of this approach is provided by the Linux operating system. Developers of applications which utilise open systems have the choice of offering these free to other organisations or charging a licence fee. The debate over whether systems should be open or closed has been going on for years. Sviokla (2005) posited that the advent of Internet-based mobile communication devices has heightened the intensity of the debate. For example, Apple initially sought to sustain

a closed model when launching the iPod and iPhone. However, the increasingly important role of the Internet in creating online social networks, where individuals and organisations seek new ways of transferring information, led to recognition of the need to create online 'ecosystems', permitting a more open access to developers who wish to offer their app on all available platforms. Apple has been forced to change strategic philosophy in order to create ecosystems for the company's range of mobile devices.

STRATEGIC CHALLENGE

Case Aims: To illustrate a dilemma that can face online organisations.

Cusumano (2011a) proposed that a platform leader must evolve new i-Strategies based upon market differentiation, or new approaches to niche or micro-market segmentation, to prevent competitors fragmenting market dominance. Facebook, for example, faces the challenge that there are thousands of social media sites offering different services to very large user bases. By the end of 2010, Facebook had attracted around 600 million users, with 70 per cent located outside the US; and in 2012, 160 million of these users were downloading mobile apps which the company had made available. The potential problem confronting the company, however, is that having opened their operation to third-party app developers in 2011, the company lacks the depth of expertise in this area of technology, when compared to Apple or Google, to enhance the ease with which these developers are able to create apps which are suitable for use on mobile devices. Bradshaw and Dembosky (2012) suggested overcoming this capability problem will require Facebook to acquire more companies which have in-depth expertise in exploiting mobile technology. The company has already made a number of acquisitions in this sector, such as the $1 billion purchase of Instagram, a social network which permits the sharing of photographs.

Cloud computing

Cloud computing represents a very important evolution in the creation of platforms which exploit data interchange via the Internet. Virtually every firm in the IT and telecoms industry needs to give careful consideration as to how the advent of cloud computing might require

revisions in their future i-Strategies and business models (Cusumano, 2010).

An early entrant into the world of cloud computing was Salesforce.com (Srivastava and Kumar, 2011). This company already marketed a CRM software product to support the management of organisations' sales forces. The company reconfigured their software to permit clients to locate their sales force management systems on Salesforce.com servers via the Internet. To retain a competitive advantage, the company launched AppExchange, an open integration platform which other application companies can utilise to build new software tools that enhance the effectiveness of Salesforce.com products.

Successful cloud computing platforms seek to attract new inhabitants by making available specific programming interfaces (APIs) or web services that encourage software developers to tailor their applications to deliver optimal performance when located on a specific cloud. Initially, cloud owners perceived benefits in creating programme interfaces which made life difficult for users to switch platforms. Over time, however, most cloud platforms have accepted this approach can cause user frustration. There is now a trend towards common programme interfaces which can easily be transferred across different platforms (Hintze, 2010; Yoo, 2011).

Iyer and Henderson (2012) identified the following benefits from leveraging clouds:

1. *Increased business focus* – access to new IT systems or capacity by linking into a cloud leaves management free to focus on more important core activities such as marketing or new product development.
2. *Re-usable infrastructure* – existing in-house IT infrastructure can be allocated to other more task-critical activities.
3. *Collective problem solving* – expertise acquired in the utilisation of cloud computing in one area can be exploited into another area of the organisation's operations.
4. *Stimulating innovation* – the organisation is stimulated by cloud-based apps to develop new ways of managing operations and interfacing with customers.
5. *Enhanced co-creation* – cloud users interact with each other, leading to the emergence of new co-creation relationships.
6. *Risk reduction* – where cloud usage will reduce the organisation's IT costs.

7. *Scaling risk avoidance* – permitted because should an organisation underestimate online demand, acquiring increased capacity on the cloud provider's servers is possible.

There were three important attributes which favoured cloud technology over hosting all IT operations in-house (Armbrust et al., 2010). One is where an organisation's own data centre no longer only has to sustain a peak load for a few days per month. Another is where demand is difficult to predict. This often occurs in the case of new web start-up businesses. The start-up can avoid investing in in-house capacity, the demand for which initially is unknown, and purchase a data management service from a cloud provider. The third is where there is need for very rapid processing of important data.

Armbrust et al. identified a number of different reasons why some organisations have been slow to switch from in-house to cloud computing model. Some organisations are concerned about cloud downtime. This is unjustified because most cloud providers have significantly less downtime than most in-house websites. Another is data lock-in, which means problems may occur when the customer seeks to remove data and switch to another cloud provider. Although this is a genuine risk, increasingly the cloud computing industry is seeking ways of ensuring data transferability is being made easier for their customers. Of greatest concern is data confidentiality, which is why in some sectors, such as healthcare, moves to exploit cloud computing have been relatively slow. In reality, the data security issue is no different from that confronting a company which retains all data on their own servers. The possible difference, however, is that most cloud computing providers probably have more advanced security systems than many of their customers.

Iyer and Henderson (2010) proposed that there is a need to understand the inherent capabilities that are afforded by cloud computing. The researchers identified the following capabilities:

1. *Controlled interface* – to create an infrastructure that is responsive to changing user requirements.
2. *Location independence* – control over access to services from anywhere within or outside the organisation.
3. *Sourcing independence* – permitting a customer to control access to their cloud space and easily switch to an alternative cloud supplier.
4. *Virtual business environments* – accessing a suite of integrated applications, processes and tools to support specific major organisational activities.

5. *Ubiquitous access* – accessing the cloud from any device via the Internet.
6. *Addressability and traceability* – enabling usage of every information service within an organisation to be tracked, located and traceable.
7. *Rapid elasticity* – permitting rapid increase or decrease in cloud usage depending upon need.

AMAZON'S CLOUD

Case Aims: To illustrate the utilisation of cloud computing and services available to users.

Having created the world's largest online bookstore, Amazon has drawn upon accumulated internal expertise in the management of online services as the basis for creating a cloud computing service. This service is utilised by 1.5 million affiliates selling products via a link to the Amazon website and 400,000 registered Amazon web service developers across the world. Amazon's cloud platform provides web services that offer easy access to documents, file sharing, applications and online documents storage (Zhou, 2013).

Amazon's Elastic Compute Cloud web services offer a number benefits, including high flexibility, lower operating and back-office costs and high online reliability. Another service, Amazon S3, has been created to permit users to securely store business information in the cloud. This permits users to avoid having to purchase and operate their own servers to undertake archiving and data storage activities. The Amazon cloud architectures offer parallelisation, which significantly reduces data processing time. This permits new businesses to avoid the problems of needing to expand their own data processing capacity as customer demand increases, as Amazon's pay-per-use service models means clients only have to pay for actual data services utilised.

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7
Marketing Mix

Exploiting analytics

Marketing planning and execution is a managerial process that is highly reliant upon external information. Until recently, internal organisational data from customer activity such as orders, pricing and delivery were complemented by the use of conventional market research to enhance understanding or close information gaps. The drawback with conventional market research is that the methodology is asynchronous, never or infrequently repeated because of high cost, based upon a small sample which limits the ability to undertake micro-analysis and data may be biased by non-response error.

The advent of business analytics has radically altered the capability of an organisation to acquire and analyse external information to enhance market understanding or attempt to close customer knowledge gaps. Real-time data from online sources offers synchronicity, is acquired at relatively zero costs compared to conventional market research, of sufficient magnitude that micro-analysis can be undertaken and non-response error is greatly reduced. Thus, organisations which have established big data systems are able to more rapidly acquire huge volumes of information from the external environment, whilst less forward-thinking competitors have not yet comprehended the benefits of exploiting real-time business analytics.

One leading FMCG (fast-moving consumer goods) company which has long recognised the benefits of business analytics is the American branded goods giant, Proctor & Gamble. The organisation has always exhibited a highly analytical orientation, relying upon sustaining a detailed understanding of markets to remain ahead of competition. In terms of business analytics, P&G has been a first mover, having created

their first operational group in 1992. In recent years, P&G and Google have exchanged teams of people. Google wants to learn about advertising, and P&G wants to acquire understanding of Google's digital data acquisition, storage and analysis capabilities. The company has identified a huge number of business processes that are being redesigned to ensure the marketing groups operate in real time (Galbraith, 2014).

Once a decision has been made to retain, revise or introduce a new marketing strategy, effective delivery requires evolving an appropriate marketing mix. In stressing the benefits of big data, Sathyanarayanan (2012) commented that for possibly the first time organisations can acquire knowledge about the entire ecosystem in which they operate. Information on activities such as product preferences and buying patterns can be micro-analysed to comprehend the nature of customer activities in the past and present, to permit more accurate predictions about the future. This outcome leads to the development of more effective marketing campaigns.

The key components of the marketing mix are the 4Ps of product, promotion, price and place. Ultimately, marketing success is dependent upon making available the product or service which offers satisfaction superior to that of competition. Thus, the proposed entry point in Figure 7.1 to permit definition of an optimal marketing mix is that of acquiring understanding of the needs of both existing and potential customers.

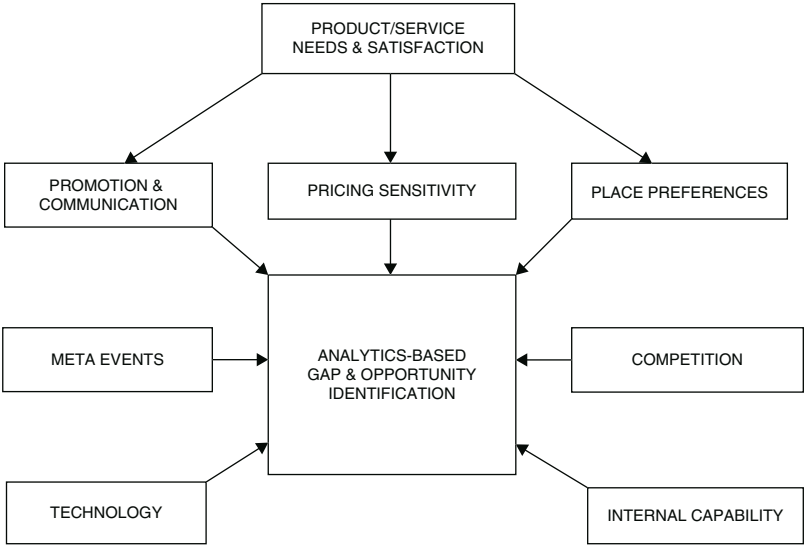

Figure 7.1 Analytics-based marketing mix determination

Generating sales cannot just rely upon making a superior product or service available to the market. Acquisition and analysis of data concerning the other 3Ps is required in order to create an optimal marketing mix. There is a tendency of marketers to consider the product or service as the primary path through which to exploit innovation. The advent of the online world has dramatically altered reality, because marketers are able to exploit a multiplicity of promotion, pricing and distribution alternatives to deliver even greater customer satisfaction. Big data provides a more in-depth understanding of customer behaviour and permits modelling of how innovative approaches using one or more of the 3Ps can create new forms of competitive advantage.

Marketing plans may be disrupted by competition. Prior to the advent of business analytics, there was often a time lag between competitors implementing new or revised marketing actions, these being identified by the organisation and an assessment made on the actual impact of a new competitive threat. This risk can be greatly reduced by the organisation being able to achieve a much faster understanding of changing competitor behaviour through the use of business analytics.

The potential influence of changes in the macro-environment, although understood as being important in the pre-big data era, were extremely difficult to analyse and proactively evolve appropriate marketing mix revisions. Big data provides much more rapid identification of an emerging macro-environmental change; thereby allowing the organisation to implement rapid marketing mix changes. One example is evident among big national retailers who have a large number of outlets in countries where localised variations in weather influences customer purchase patterns. A change in weather conditions can be identified by purchasing geographically specific long-range forecasts. Thus, should a forecast indicate unusually cold wet weather in one area of the country and hot sunny conditions elsewhere, the retailer is able to revise the merchandise mix in specific stores to fulfil the expected purchase patterns of consumers in response to changing climatic conditions.

Product

One use of social media analytics is product utilisation at each stage in the life cycle in relation to brand awareness, brand engagement and word-of-mouth. During the pre and early life cycle stages, analytics help identify any changes in taste, behaviour and sentiment affecting product design and development. In the growth and maturity stages, developers can add and adjust features, reducing the lead time for creating

next generation products. Analytics also permit the capture of conversations involving customers. Such insights permitted Del Monte Foods, Inc. to create and launch a new dog food product in just six weeks.

The software industry has taken the lead in social media-based product testing by releasing various versions of its products and soliciting reactions and, in the case of open source programs, allowing user changes. The most advanced use of social media-based conversations is co-creation where online users and businesses function as informal partners in generating new product ideas and even entirely new product categories (Weigo and Gordon, 2014).

As illustrated in Figure 7.2, the marketer has four options for exploiting business analytics. These four options are determined by the two dimensions of 'existing versus new products' and 'existing versus new markets'. Most organisations seeking revenue growth will usually focus upon improving existing products or services in existing markets. Business analytics can be utilised to determine revisions that can lead to improvements in the core product or service. The American GE Corporation, for example, utilises business analytics to identify ways of improving products by adding features or upgrading product performance for their portfolio of consumer appliances. An alternative to a product improvement is to use business analytics to add additional services to the core proposition. Rolls Royce, for example, uses remote sensors to monitor the performance of all of its engines while in use on aircraft around the world. By analysing the data acquired the company

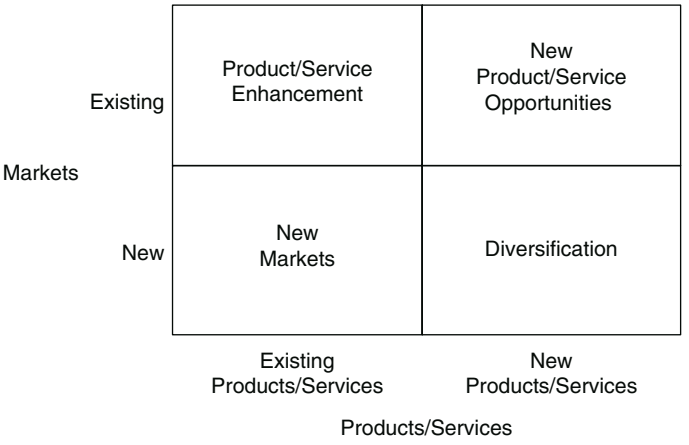

Figure 7.2 Analytics-based strategic direction matrix

is able to offer generic guidance to all airlines on ways of optimising engine performance through to advising a specific airline about maintenance of a specific engine on a specific aircraft.

Of the other three options, the decision over developing a new product or entering a new market will be influenced by the perceived ease of market entry in terms of having the internal competences to manage this process, versus remaining focused upon an existing market to develop a new product to sustain revenue growth. An example of moving into a new market with an existing product is provided by Amazon. Google provides an example of offering a new product in their most important market – the generation of sales from selling advertising space on the company's search engine website. Having accumulated a huge database of site visitor behaviour, and having the capability to analyse this information via the Google Adwords facility, the company has developed a guidance system whereby advertisers are provided with recommendations on how to revise and modify their advertising message to increase click-through rates to Google web pages.

The riskiest of all product strategies is diversification, because the activity involves the successful development of a new product and concurrently entering a new market where the organisation has limited or no managerial experience. As a consequence of the perceived risk and the potentially massive financial loss should the plan fail, this means very few organisations are prepared to consider this option unless it is seen as the only way of sustaining future revenue growth. Hence, either the organisation is desperate and decides diversification permits 'one last throw of the dice' or alternatively, the organisation is extremely cash rich and can afford the occasional market failure. An example of this latter scenario is provided by Microsoft who have recently utilised their big data expertise to develop a range of medical record systems for the healthcare industry. They have implemented this diversification in the full knowledge that other organisations have lost large sums of money or been forced into bankruptcy because of the numerous obstacles which exist in persuading the healthcare sector to make greater use of computer-based patient management systems.

PRODUCT DEVELOPMENT

Case Aims: To illustrate how big data and analytics can enhance the development of new and improved products.

Nike, the leading brand in the sports footwear industry, recognised the benefits of acquiring real-time data about their products for use in

developing new and improved products (Stonehouse and Minocha, 2008). The data is acquired by embedding sensors into their products and the data is uploaded into the company's vast database for in-depth analysis. By adding a GPS feature to their footwear, Nike is able to develop new running apps that their customers and their competitors' customers can access through NikePlus.com. Business analytics permit the development of a new Nike running shoe within 18 months. The creation of new apps represents an extended service benefit. This software involves continuous development, assisted by co-development by customers and app developers. To maximise the impact of this service, the company has made the organisation's software code for NikePlus.com available to developers.

The strategic issue is that the move to exploit business analytics requires a whole range of expertise. A data analytics team is required to handle and analyse the incoming data. This team works alongside software developers creating new apps and web designers managing the NikePlus.com site. Also needed are hardware engineers who understand how to embed sensors and chips into Nike products and work with hardware suppliers in exploiting new technology to create next generation products. The other employee component is individuals who monitor the social media and interact with external contacts from sources such as Facebook and Twitter. Once such a diverse range of expertise has been brought together there is the need for a senior marketer to coordinate all these activities and reach decisions about new product development and launch programmes.

For any organisation which utilises this type of diverse input to exploit data, there is the decision as to whether the various experts should be located in specific departments or brought together in a new, semi-autonomous product development group. The decision made by Nike, which is similar to other major organisations seeking to be more entrepreneurial and to shorten time to market schedules, has been to add a new, semi-autonomous group which works outside of the organisation's hierarchical departmental structure. In adopting this solution, it has proved critical that the knowledge and the activities of the group are known and utilised across the rest of the organisation. To achieve this objective within Nike, the new digital product development group sits alongside the marketing and product development departments, with all three under the overall control of a divisional manager.

Promotion

The purpose of promotional activity is to supply information that enhances customer awareness and to provide an added stimulus to form a positive view about an organisation, product or service. The Internet has provided organisations with a new channel of communication, but unlike most other promotional channels, this system offers an opportunity to enter into one-to-one communication with potential customers (Kes, 2011).

According to Berthon (1996), the Internet is a mix of personal selling and broadcast advertising. He suggested that the Internet can be used to generate awareness, passively provide information, demonstrate the product and support interactive dialogue. Acceptance of Berthon's perspective permits the evolution of a customer purchase behaviour model in which the Internet can be used to move customers through the successive phases of the buying decision process. As illustrated in Figure 7.3, it is theoretically possible to assess the effectiveness of the website

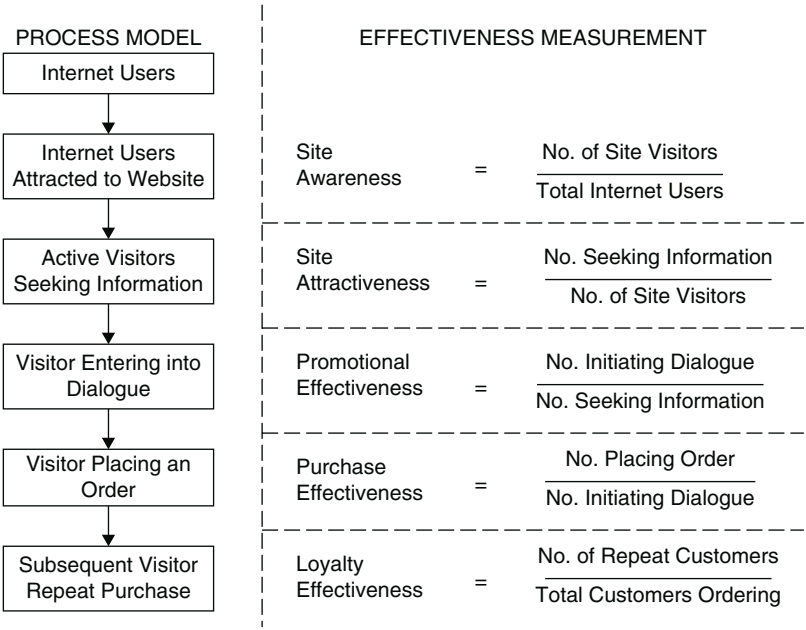

Figure 7.3 Internet process model

in terms of influencing customer behaviour, as individuals progress through each phase of the buying process. Application of the measurement tools posited in Figure 7.3 can only occur in those cases where a website is capable of recording all hits and data are generated about the nature of visitor hits. This data provides the opportunity to undertake business analytics of the type shown in Figure 7.4, which can be used to enhance and improve the communication and persuasive content of an organisation's online promotional campaigns.

ONLINE MEDIA RESEARCH

Case Aims: To illustrate how media research can provide further understanding of audience response to online campaigns.

In the world of terrestrial advertising, media planners utilise coverage, effective frequency and recency as parameters upon which to base their media buying decisions. The issue arises as to whether the same concepts are transferable into the world of online advertising. Effective frequency is the variable concerned with achieving changes in awareness levels that will eventually result in a transaction. In contrast, recency strategies are concerned with actual generation of immediate sales. In the terrestrial world, reach/frequency models have long existed which permit planners to determine what percentage of the target audience is impacted by a campaign, and how frequently.

The issue confronting the online media planner is to determine the relationship between advertising impressions, awareness, clickthroughs and sales. To develop appropriate models for the online world, the New York advertising agency, OgilvyOne, undertook studies of two of their client's promotional activities (Broussard, 2000). Case A was a client that uses online banner advertising to attract customers to the company's own website. The research evaluated changes in the number of new sales leads generated as a result of shifts in the frequency of advertising exposure, in terms of the ratio of advertising impressions to a site's unique users. The metrics used to construct a decision model included:

1. *Impressions* – the number of banner advertisements run on each site.
2. *Unique users* – the number of different people visiting a website.

3. *Frequency of exposure* – calculated by the number of impressions divided by number of unique users.
4. *Cost per lead (CPL)* – the final cost to persuade an individual to submit to express interest in company A's services.
5. *Cost per thousand (CPM)* – the dollar cost to buy a thousand impressions.

The analysis concluded that people tend to click on banners during the first few exposures and beyond that point, response rates diminish significantly. The lowest CPL is achieved when frequency of banner exposure is relatively low. A higher CPL occurrs when impressions are unusually high. This can happen when the selected website featuring the banner advertisement is extremely popular, leading to potential customers being exposed to a frequency of advertising greatly in excess of that required to prompt individuals to click into the company website and express interest in company A's services. Having identified this situation, the role of the media planner was to improve overall CPL by re-allocating media spending to more productive sites and thereby optimise customer lead acquisition costs.

In terms of the frequency threshold necessary to influence brand awareness utilising banners in the early years of the Internet, this tended to be lower than in terrestrial campaigns. This is because the banners are a small component of all of the visual elements being presented to the site visitor. However, with faster downloads permitting rich media such as video streaming and interactivity, the online frequency threshold has declined. Company B uses a mix of promotional channels but to develop an effective online decision model, OgilvyOne's study only examined the impact of online advertising on site visitors. When consumers clicked on a banner they were redirected to the company's corporate site. Through the use of cookies, individual visitor rates could be measured. To determine awareness and purchase interest, conventional market research tools were utilised. Banner advertising had a positive branding effect on customer awareness and purchase intent with unaided brand awareness rising from 32 to 70 per cent. In terms of exposure impact, 80 per cent of the effect was achieved by the time site visitors had seen seven advertisements. Similar to the known effect of television advertising on consumers, additional frequency of exposure led to awareness and product attributes continuing to increase, but at an ever declining rate.

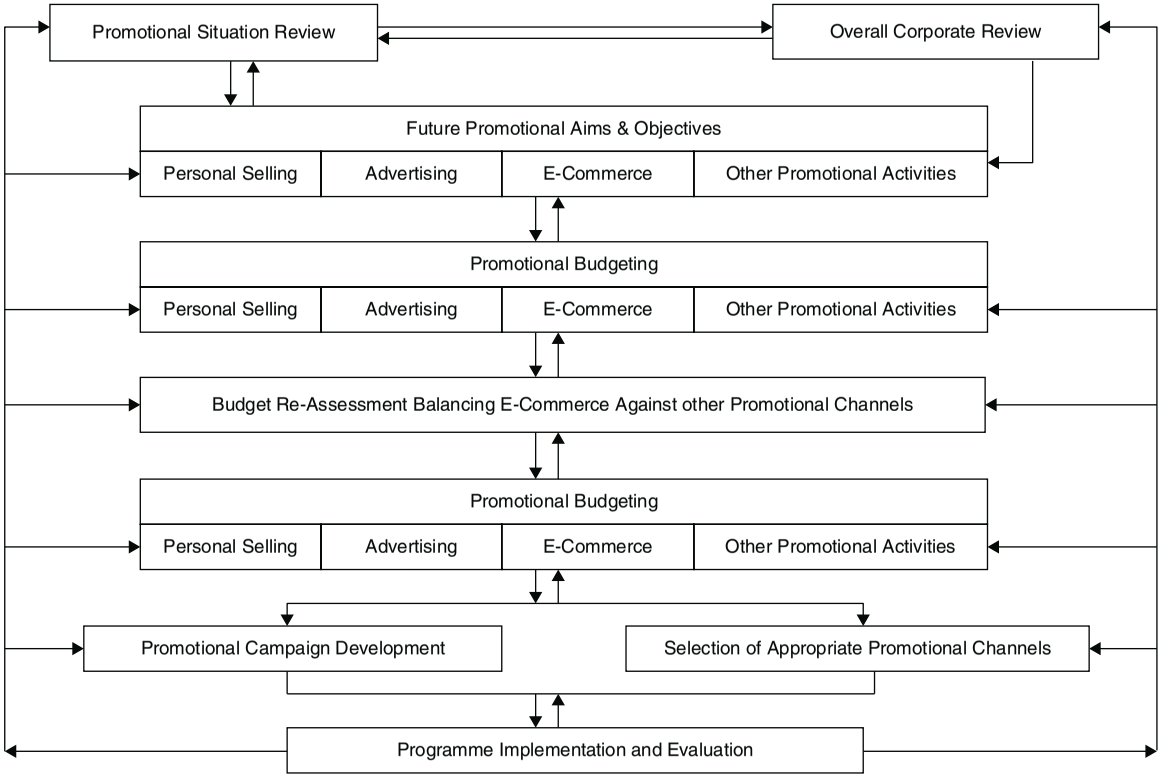

Figure 7.4 Promotional planning process

SHORT MESSAGE SERVICE (SMS)

Case Aims: To illustrate how the advent of mobile devices has permitted the creation of a new approach to online promotional activity.

The advent of mobile phones led to the emergence of organisations engaging in Short Message Service (SMS) activities, in which text messages are sent to phone users. The advantage of the technique is that, for a very low cost, a large number of individuals can be contacted. The disadvantages include the possibility of organisations engaging in spamming and the fact that the text message is restricted to a maximum of 140 characters.

Rettie et al. (2005) undertook a study of UK consumers to gain their perceptions about receiving SMS promotional messages. They concluded that 44 per cent of consumers found the activity acceptable, but 21 per cent considered SMS promotions were an unsolicited intrusion of privacy. They concluded that this latter reaction can be reduced by SMS senders seeking consumers' permission to send them messages. Of those who received messages, 89 per cent read them but only 5 per cent forwarded the message onto their friends. In the case of branded promotional messages, brand recall was only 16 per cent. In terms of impact, 78 per cent of respondents indicated the receipt of a SMS had no impact on their existing attitudes towards a specific brand. However, a more positive reaction was found in those cases where there was a specific benefit offered such as a discount coupon or news of a special offer. In these cases, 89 per cent of consumers were likely to exhibit a higher intent of future purchase. These results indicated that well-defined targeting, careful timing and provision of appealing message content can greatly enhance the benefits of engaging in this type of online promotional activity.

Online sales promotions

Sales promotions are any activity which offer customers a temporary increase in the value of future purchases. This can be achieved through mechanisms such as free goods, price packs, cross-selling, coupons, premiums, competitions and sweepstakes. In the 1990s, the perspective among manufacturers in countries such as the US was that retailers were forcing them to place too greater an emphasis on sales promotions. In an attempt to reverse this situation, companies such as Proctor &

Gamble, Kraft and General Mills did move towards a concept of reducing the scale of sales promotions by focusing on seeking to offer lower everyday prices. However, the advent of online coupons made possible by the Internet, combined with the 2008 global recession, has reversed any trend towards attempting to reduce the emphasis given to sales promotions. Major supermarket chains feature downloadable coupons on their websites and manufacturers have now also created their own online couponing sites (such as PGbrandsaver.com and PGeverydaysolutions.com)

The popularity of online coupons has risen in recent years, reflecting growing use of the Internet and, as economic conditions have worsened, more consumers are seeking ways of reducing their weekly bills. In the US the number of online coupons downloaded in 2009 grew 58 per cent from 1.97 billion in 2008 to 3.11 billion (NCH Marketing Services, 2010). The Internet is a very efficient mechanism for coupon distribution, as evidenced by the fact that, in the US, redemption rates for online coupons in 2009 was 15 per cent, whereas the redemption rate for coupons in more traditional channels such as newspapers was less than 1 per cent. In the US, consumer usage of coupons has been further heightened by the advent of third-party sites such as RetailMeNot. This company offers online coupons from 7500 grocery outlets, giving retailers access to over 120 million consumers. Another increasingly popular promotional device is the 'load-to-card coupons'. This approach offers discounts via the Internet or mobile device and permits digital redemption via the consumer's loyalty card (Neff, 2011).

Offering sales promotions via the Internet reduces the time and effort required by consumers to locate offers of interest to them (Fortin, 2000). For suppliers, the medium reduces the time involved in producing and distributing coupons and because the consumer downloads the coupon, printing and distribution costs are reduced to zero (Carmody, 2001). Suppliers' knowledge of Internet usage permits more accurate targeting of those individuals to whom the coupon is made available, which is probably why online redemption rates are higher than the rate for terrestrial channels.

In Korea, Jung and Lee (2010) concluded that consumer behaviour was similar to that reported in other countries, in terms of online couponing achieving much higher redemption rates than terrestrial couponing. They noted that suppliers need to carefully assess the impact of the face value of the coupon because, below a certain level, redemption rates will be extremely low and above a certain value, redemption rates do not increase significantly.

GROUPON

Case Aims: To illustrate how innovation in sales promotion has spawned a new global business.

Groupon was launched in Chicago in November 2008 by Andrew Mason and introduced a new approach to couponing. Subscribers to the site are offered coupons for deals specifically designed to meet their local needs and location. Every offer requires a certain number of people to sign up and if there is insufficient demand the offer is withdrawn. To stimulate demand, subscribers and the company promote the use of social networking sites such as Facebook and Twitter. Subscribers go online and purchase the coupon of interest. Groupon splits the revenue with the company offering the coupon. An example of the concept is provided by Celadon & Celery, an event-planning and flower-arranging business (Slater, 2012). Consumers are able to purchase a coupon which reduces the price of a $300 flower arranging lesson to $99. Celadon & Celery found that many of the people who attended a class returned to book the company to arrange an event such as a wedding.

Groupon subsequently entered Europe, Japan, Russia and Latin America, mainly through the strategy of acquiring smaller local firms which have replicated the Groupon model. In many cases, the company purchased firms who were potential future competitors in overseas markets (Anon., 2010). Overseas expansion has resulted in Groupon operating in approximately 30 countries and attracting over 15 million subscribers across the world.

Price

Strategic pricing is determined by the organisation's longer-term view in relation to how the organisation wishes be positioned in the market. Tactical pricing is the process of responding to a specific situation (such as a price reduction by competition). Combining data from online sources permits more accurate forecasting of demand in relation to consumer preferences of the product or service proposition and the price at which this is offered to the market place (Vinod, 2008). For typical consumer purchases such as toothpaste or deodorant, the market can be segmented into those customers whose purchase decision is based on price, those whose decision is based on quality and those for whom brand identity is the dominant factor (Gottfredson, 2007).

Pricing can be a powerful decision lever in terms of influencing purchasing decisions. It is essential to understand how price affects customer behaviour, as this permits more informed pricing decisions to optimise sales revenue. Business analytics has provided organisations with an extremely powerful tool through which to achieve this goal. Key aspects of data analysis include normalisation to remove the effect of extraneous factors, determining elasticity in response to price change and how different market segments are influenced by prevailing prices. Creation of predictive models using business analytics greatly improves the accuracy of pricing strategy decisions (Bata et al., 2011).

To establish a business analytics system to manage pricing decisions across multiple channels requires analysis tools, execution tools and price opportunity tools (Valkov, 2006). Analysis tools enable interactive exploration of historical data and undertake a wide variety of quantitative and statistical analysis. Some examples of the analysis functions include:

1. Measuring the willingness to pay.
2. Tracking trends in product life cycles.
3. Identifying underperforming products.
4. Segmenting customers and products.

The execution tools facilitate the implementation of pricing actions, track price compliance across markets, products and channels. Price optimisation tools permit more informed strategic and tactical pricing decisions, having the highest technical complexity. They typically feature embedded behaviour modelling, demand forecasting and risk assessment to provide pricing recommendations on the basis of undertaking 'what if' modelling of alternative pricing scenarios.

Established brands have a loyal customer base willingness to pay a premium price. This is vital for branded goods seeking to generate a profit margin sufficient to fund promotional activities to counter the effect of competitors attempting to build business by offering lower priced goods. Although this ability is validated for terrestrial markets, the question arises of whether the same behaviour traits are evident in online markets. To examine this question McDonald and Wren (2012) researched the UK's online market for consumer insurance products. They concluded that insurance companies which had a very loyal customer base have been able to sustain a premium price when marketing their offerings online. It was also apparent that where loyal customers engage in a high level of online searching, this usually indicates

increasing pricing sensitivity indicating a need to respond by reducing prices to retain the loyalty of these consumers.

A characteristic of many service markets is product perishability. For example, revenue is lost forever when a plane leaves with unsold seats or a hotel fails to fill every room on a specific night. Schutze (2008) researched the online pricing behaviour of hotels in Vienna. He concluded that hotels utilise one of two pricing options; namely pre-fixed pricing where prices remain relatively unchanged but reflect recognition of different customer segments and dynamic pricing in which the hotel starts to make frequent price changes as the day of arrival approaches. It appeared that the class of hotel was not a significant factor in terms of influencing pricing strategy. Schutze concluded that as more hotels develop a capability to exploit business analytics, this will in turn influence their approach to both strategic and tactical pricing in order to maximise revenue.

Place

In terrestrial markets, organisations tend to rely upon what are the channel norms utilised within a specific sector. The focus of effort is ensuring contact is sustained with key customers, especially in those cases where the customer is the dominant user or intermediary. In those markets where intermediaries are few in number, the marketer often has to find ways of avoiding actions that might generate channel conflict.

Once an organisation moves online, the management of place becomes a more complex and potentially more rapidly changing situation. Van Dijk et al. (2007) posited that consumers usually seek a seamless shopping experience across all channels, products and geographic location. This requirement demands organisations maximise revenue by building their distribution strategy around fulfilling customers' multi-channel desires. Over the last two decades, the number of alternative distribution channels in countries such as the US has increased significantly. Organisations who in the past focused upon serving the needs of customers through terrestrial outlets are now in a position to offer a range of online options through which to interact and meet the preferences of specific customer groups. These include the Internet, direct mail, interactive telephone systems and interactive TV.

In the case of consumer markets, Black et al. (2002) concluded that consumer characteristics, product characteristics, channel characteristics and organisational characteristics together influence channel choice. Reardon and McCorkle (2002) proposed that consumers selecting a

distribution channel primarily consider time versus money and time versus psychological benefit, such as a pleasurable or social experience.

Prior to the advent of business analytics, firms moving online were rarely able to predict the revenue impact of such a move, nor assess which online channel(s) would provide the best opportunities. This uncertainty has been reduced as organisations use concepts such as quantitative market mapping to develop equations to describe the influence of specific variables upon online channel performance. Typically, the primary focus of analysis is upon customer behaviour in specific channels in relation to issues such as time of delivery, convenience, purchase size and diversity of choice. Less critical, but still important, is the acquisition and modelling of data concerning the behaviour of the intermediaries who constitute a specific channel and the degree of strategic convergence which exists between themselves and their suppliers (Wallace and Johnson, 2009).

CUSTOMER AND CHANNEL INTERACTIONS

Case Aims: To illustrate how an understanding of information search and purchase behaviour can assist the management of marketing activities.

Lihra and Graf (2007) undertook a study of how consumers in the US progress through the various stages of the buying process when purchasing furniture. The researchers determined that the buying process is divided into five steps:

1. Activation.
2. Information search.
3. Product evaluation.
4. Product selection.
5. Transaction.

Consumers have the option of word-of-mouth, catalogues on the Internet, advertising, retail store and the telephone to obtain information. The main reasons consumers identified for purchasing furniture were change of home, decorating a room in an existing home and replacing worn-out furniture. When initially considering the purchase of new furniture, none of the identified communication channels were found to be more important than any other at the beginning of the purchase process. This situation changes in the focused search phase as consumers begin to use the attributes of

being able to see, feel and touch when determining the best channel through which to acquire additional information. Other factors influencing the choice of communication channels included ease of use, channel response time, information abundance and consumer shopping habits. Consumers unfamiliar with furniture shopping via the Internet did not expect to be able to find sufficient information by visiting websites. The furniture store was considered as the most efficient way to gather information Most consumers expressed the view that in the future they expected to use the Internet more frequently.

At the final product selection and purchase decision stage, consumers placed greatest trust in the retail store. Payment security, available information and website complexity were all reasons why consumers still preferred terrestrial over Internet shopping when implementing the final purchase decision for furniture.

Hence in the case of furniture, and probably most other high-value tangible goods, it seems probable that retail outlets will remain the dominant preferred channel. At the time of the study, both furniture manufacturers and retailers in the US still perceived the Internet as a somewhat limited channel for either information provision or transactions. There is evidence, however, that over time consumers are increasingly utilising the Internet to gain a much wider perspective on the nature and design of furniture that is available. Hence manufacturers and retailers do need to be aware of this trend and undertake research in order to identify emerging changes in consumer tastes and the channels favoured during the information search and product purchase phases.

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8
Websites

Visitor behaviour

Various concepts have been utilised to evolve models to define the nature of customer behaviour in relation to the utilisation of websites. Alhudaithy and Kitchen (2009) posited that these various theories may not encompass all the factors that could influence an individual's Internet utilisation. This is because these various theories tend to provide somewhat vague constructs which may not be entirely relevant to the specific nature and impact of online technology. As a consequence, these authors concluded that the actual nature of a website's specific features needs to be considered when seeking to achieve an effective understanding of visitor behaviour.

Shih's (2004) suggested models of electronic purchasing should encompass consumer perceptions of how information search influences perceptions of online supplier quality. When consumers access websites, their initial experience in relation to the availability of information will affect their purchase decision. Mandel and Johnson (2002) concluded that the visual impact of a website will also influence customer attitudes. Other studies have identified the influence of the provision of Frequently Asked Questions (FAQs), feedback forms, search engines, upload/download speed and interface interactivity in enhancing user perceptions of website appeal.

Users can be classified into two broad categories; namely websites offer pleasure or functionality. Website features will influence users' level of trust in an online supplier. (Rattanawicha and Esichaikul, 2005). Mithas et al. (2007) concluded that a relationship exists between website content and customer loyalty with content on relationship-oriented websites being more important in building customer loyalty than for transaction-oriented sites.

Customer purchase behaviour theory is based upon a five stage model of need recognition, information search, information evaluation, purchase decision and post-purchase evaluation (Kotler, 2003). Zeng and Reinartz (2003) suggested that compared to terrestrial purchase behaviour the Internet can impact different stages of the purchase process. Alhudaithy and Kitchen (2009) proposed that by identifying the influence of websites on the various stages of the purchase decision process, this will enhance website effectiveness.

Huarng and Christopher (2003) utilised the five stages of purchasing process model to define website design features to assist in generating a purchase decision. They proposed that any analysis should start with understanding customers' purchasing behaviour and to create websites that match users' needs by defining online customers' information requirements. Websites have the potential to trigger customers' interest in engaging in an online transaction and also to permit the development of a relationship with customers (Yoon et al., 2008). For the more involved clients, hyperlinks to detailed product specifications, pictures or a newsletter can increase potential customer awareness (Chen and Lee, 2005).

Websites are very effective as information sources. Flavian et al. (2005) noted that the Internet differs from terrestrial information sources in relation to both offering greater flexibility and information accessibility. Furthermore, a website can provide customers with a range of choices from just accessing basic information through to the provision of highly detailed information. In the case of online banking, Pikkarainen et al. (2004) concluded that the most influential factor in relation to building customer trust was the amount of information provided by a bank's website.

At the information evaluation stage, potential customers use characteristics such as product attributes, degree of importance, personal beliefs and expected satisfaction. In the case of banking services, Shih and Fang (2006) found that information quality influences consumer attitudes toward the adoption of Internet banking services. Information attributes most likely to have significant impact on customer attitudes were correct information, complete information and rapidity of information provision. At the purchase decision stage, different factors can influence the customer. One is perceived risk (Chen and He, 2003) and tends to be of greater concern in relation to online transactions. Websites that ensure potential customers perceive the Internet is a simple, secure and reliable way of making purchases will be more successful in persuading customers to purchase (Drennan et al., 2006). A positive post-purchase evaluation will greatly increase customer loyalty

and repeat purchasing is more likely to occur (Huarng and Christopher, 2003). Hence, companies must ensure that having received an order from customers, deliveries occur on time, the correct goods are shipped and that the customer is totally satisfied with their purchase.

WEBSITE EFFECTIVENESS (Birley, 2009)

Case Aims: To illustrate how certain issues can enhance the effectiveness of an organisation's website.

1. Ensure the website is well planned, well designed and constructed properly.
2. Ensure the website is perceived by visitors as being up-to-date and relevant to their needs.
3. Do not rely on Search Engine Optimisation (SEO) to maximise position in search rankings.
4. Undertake a thorough, detailed and ongoing testing programme to ensure the website is operating effectively.
5. Simplicity enhances the ease with which site visitors can utilise, interact and navigate their way through the website.
6. Monetisation can seem attractive but free access will significantly increase visitor levels.
7. Have an accurate understanding of the website's audience.
8. When spending to build site awareness, research whether there is a clear relationship between offline campaigns and site awareness.
9. Websites can age quite quickly, so invest in regular site redesigns.
10. Be prepared to redefine the online strategy when new technology becomes available.

Satisfaction factors

There are a number of factors which are known to influence visitors' preferences in relation to utilising websites (Sismeiro and Bucklin, 2004). One is 'usability' which determines the perceived quality of a user's experience when interacting with an online system. McKinney et al. (2002) concluded that where a website causes problems for users, then the users are likely to log off without proceeding any further.

Website design is a balancing act between ensuring adequate functionality versus providing sufficient complexity in order to permit a purchase decision to be made (Shneiderman, 2005). This is because the customer experience during information search will influence the purchase decision. Web usability is a variable which extends to the important activity of implementing updates to exploit advances in online technology. Wolk and Theysohn (2007) concluded that updates that further enhance usability lead to higher visitor traffic, higher sales and greater customer satisfaction.

Another factor influencing visitor satisfaction is 'navigation'. Shneiderman suggested that navigation should ensure users have a clear idea about what is the precise nature of their purchase decision. This is especially important to inexperienced users who are more likely to make errors while implementing a purchase. McKinney et al. (2002) concluded that effective websites ensure visitors can easily locate desired information and hence are willing to remain online to complete the transactions. Turban and Gehrke (2000) recommended in relation to navigational controls that it is vital that links with users remain unbroken, are adequate in number and are easy to locate.

Another variable influencing visitor attitudes is the degree of Customisation/Personalisation (CUST). Mass customisation and personalisation are important in building effective relationships with potential purchasers. Agarwal and Venkatesh (2002) determined where visitors feel a website reflects their needs and requirements, repeat visits will be higher. Palmer (2002) determined that effective vehicles for CUST include the provision of feedback, the maintenance of feedback records and offering access to FAQs. Tarafdar and Zhang (2005) believe customisation should not be considered as a component of usability to the point of creating excessive user complexity.

Download speed is influenced by a number of factors, some of which are beyond the control of a website's owners. One of the most critical non-controllable variables is a visitor's Internet connection, the download speed offered by the ISP and the device utilised to access online services. In terms of how website owners can influence download speed, this involves decisions over the content of the website in terms of the nature of offered images, video clips and/or audio materials. Turban and Gehrke (2000) concluded that visitors often prefer simpler websites that provide service and content versus other sites containing flashing banner advertisements, changing images and other multimedia effects, all of which can drastically lengthen download time. Most website visitors

prefer speed over design, and interest in a specific website rapidly declines when download delays are encountered.

Galletta et al. (2004) concluded that when delays exceed six seconds, attitudes turn negative, after ten seconds there is a loss of interest, at 15 seconds a loss of patience, after about 30 seconds the user abandons the task. As web technology and download speeds have improved, online users' tolerance of delays have diminished (Nah, 2002). Galletta et al. (2006) noted that acceptance of delay may be moderated by both the depth/breadth of a website and users' degree of familiarity with a website. The former has arisen because advances in online technology have permitted website designers to create much larger and more extensive websites to offer visitors more information and product/service choice. Accessibility causes users to become frustrated by websites which frequently go offline because lack of access means visitors cannot acquire the information they require or complete a transaction. Ivory and Megraw (2005) concluded that accessibility can be optimised by adhering to accepted technological standards for tables, forms and browser scripts.

Customer intent

Barry and Howard (1990) concluded that it is necessary to recognise the effect the characteristics of a communications medium and the moderating role of these characteristics have on an audience, in order to reach a better understanding of how individuals respond to a promotional message. The traditional hierarchy of the 'response to advertising model' is the sequential process of Attitude – Awareness to Brand – Intention to Buy. San Jose-Cabezudo et al. (2008) posited that the same concept is applicable in relation to how an individual responds to online information. They noted, however, that there is the requirement to consider the added influence of the Perceived Informative Value (PIV) and Perceived Entertainment Value (PEV). In their view, these additional values are required because some website visitors are information seekers whereas others are primarily entertainment seekers.

Rogers' (1995) Innovation Diffusion Theory proposed that there are five significant characteristics that influence acceptance of a new product or service; namely relative advantage, compatibility, complexity, trial ability and observability. Karahanna et al. (1999) validated that Rogers' theory can be applied to describing the factors influencing online customer purchase intent. Tung (2011) linked together diffusion theory and Karahanna et al.'s research to propose the following factors are key influencers:

1. The compatibility of intent to utilise the Internet.
2. The perceived usefulness of the Internet.
3. The perceived quality of the online experience.
4. The perceived ease of use.
5. The personal confidence in utilising IT.

Interactivity

Li and Bukovac (1999) suggested that website visitors could be divided into 'seekers' and 'surfers'. Seekers use the web to search for specific information to complete a task or reduce purchase uncertainty. They exhibit highly goal-directed behaviour. Surfers undertake a more random approach to selecting which websites to visit and often perceive the Internet as a source of emotional satisfaction.

According toYadav and Varadarajan (2005), interactivity increases with the consumer's perception of 'mutual controllability' and thereby results in more effective communication between online buyers and sellers. Ariely (2000) noted that permitting visitors control over information interactivity can require utilisation of very significant technical resources by website owners. 'Marketer-controlled interactivity' describes the capability of the website designer to make available an online experience that provides a more effective interface which fits more closely with the personality, preferences or needs of a particular consumer group (Häubl and Trifts, 2000). Compared to print advertising, the website designer has much more freedom over the quantity of information and graphics that can be utilised to enhance the communication of a promotional message. The potential risk is that a website may become excessively complex to the point of decreasing attractiveness, friendliness and usefulness to the user (Stevenson et al., 2000).

Effectiveness

The theory of advertising effectiveness posits that customer response will be influenced by whether the advertised goods are a high-involvement or low-involvement product or service. With high-involvement items, audiences are prepared to spend time and effort in seeking more information. In the case of low-involvement items, the audience is less interested in the goods and spends less time seeking information (Celsi and Olson, 1988). With websites, visitors are in control of an advertisement and can decide how long they wish to spend acquiring

information. Dahlan et al. (2003) posited that visitors will spend more time on a website featuring high-involvement products or services and less time on websites offering low-involvement goods. This outcome was previously noted by Dahlan and Bergendahl (2001) who found that click-through rates for low-involvement banner advertisements were much lower than for high-involvement advertisements.

'Functional products' are evaluated on the basis of users comparing the capabilities and inherent attributes of different brands. 'Expressive products' are judged in relation to the emotional influence on the customer (Mittal, 1989). In the case of functional goods, customers tend to seek information about actual product performance. This behaviour means visitors to a functional product website will engage in a purposeful search for information. In the case of expressive products, the online search may be more random and less directed. Dahlan and Bergendahl (2001) concluded that visitors who clicked on banner advertisements for expressive products were already positively disposed towards the goods being advertised. Those customers who clicked on banner advertisements for functional products usually had not yet formed an opinion in relation to reaching a purchase decision.

Atmospherics are used by terrestrial retailers to create in-store environments that enhance the shopping experience. The aim is providing added motivation to purchase and the concept is applicable in online retailing. Dailey (2004, p. 796) defined online atmospherics as the 'conscious designing of web environments to create positive affect and/or cognitions in surfers in order to develop positive consumer responses'. Michon et al. (2008) suggested online atmospherics are of two types; namely high- and low-task relevant environments. The high-task environment is information directly relevant to the shopper's goals, such as merchandise details, price and navigational aids. Low-task relevant environments include components of the website designed to make the visit a more enjoyable experience, through features such as music, images and video streaming.

According to Hunter et al. (2011), web designers often fail to understand visitor preferences over atmospherics. Eroglu et al. (2003) concluded that price orientated consumers are primarily affected by a highly functional online environment. Hence, for these consumers excessive emphasis on aesthetics or a high level of advertising content may actually demotivate the site visitor. Online visitors seeking a positive experiential shopping experience will have a negative response where there is a failure to offer effective atmospherics.

INNOMEDIATION

Case Aims: To illustrate the role of websites to create networks and assist information exchange via third-party platforms.

Organisations can gain further benefits from the Internet by complementing their own channels of customer interaction with third-party, indirect information providers. Sawhney et al. (2003) proposed this activity should be labelled 'innomediation' and these operations considered as fulfilling the role of being 'infomediaries'. Their role is to collect and organise information on groups of products and services for customers who have a specific interest or need.

Infomediaries offer the benefits of connecting companies with a larger customer base and, because of a perceived neutrality, will assist in enhancing customers' trust in products or services which are featured. A by-product of connecting customers and sellers is that infomediaries gather customer-generated knowledge to assist sellers enhance the information to be made available. One example is iVillage, which created a virtual community of women who engage in online discussions about products such as clothing and cosmetics.

Another role of the infomediary is gaining information about non-users, which for company-owned websites is extremely difficult. Additionally, infomediaries can enter into in-depth interactions with customers to a degree and to a level of honesty which is rarely achieved by individual companies. As a consequence, these third-party sites can fulfil the role of being an innomediary, offering a unique capability to assist suppliers in engaging in innovation to develop new or improved goods. An example of this type of innomediary is market research firms that operate online customer panels.

The Innovation Marketplace Operator is a network which connects many customers, offering sources of innovation through being mediators to many potential buyers. In most cases, the innovation is in the form of intellectual property, such as discovery, patent or new knowledge. This type of site has become increasingly popular as the pace of technological change has accelerated and the cost of developing commercially successful technological solutions has continued to rise. An example is provided by the pharmaceutical company, Eli Lilly, which has created an Internet-based platform called InnoCentive. Initially, the site was designed to facilitate dialogue between the company, lead users and members of the scientific community. Over time it has evolved into acting as an independent

third party to connect a broad range of solution seekers with a large number of problem solvers. Only a few years after launch, the site had attracted over 10,000 scientists from 105 countries able to interact in confidential online project meeting rooms. Sawhney et al. (2003) proposed that innomediation is particularly relevant in four situations; namely in fragmented consumer markets, in B2B markets where the tacit knowledge of customers is critical, in emerging markets such as mobile devices where customer preferences are poorly understood and in lifestyle markets where the social aspect of knowledge creation is important.

Service quality

There is a three stage process in making an online purchase. Stage one is where the potential customer reviews the product and pricing information made available by the online supplier. The next stage is where the customer uses the online system to purchase the selected good. The final stage concerns the successful delivery of ordered goods and the resolution of any customer problems that may arise having received the goods. Long and McMellon (2004) posited that customer satisfaction is strongly influenced by perceptions over the level of service quality experienced during all three stages of the purchase process.

One factor influencing customer satisfaction is quality of the online supplier's Internet systems, covering such attributes as website design, access, ease of use and reliability (DeLone and McLean, 2003). Another factor influencing customer attitudes is the quality of experience provided by the online supplier. Satisfaction is an individual's affective reaction to the cognitive appraisal of service quality performance. When a customer perceives they have been well served, satisfaction is likely to be increased. Functionality is a concept associated with IT systems in relation to the capabilities of a system to fulfil the needs of the user (Lightner, 2004). Cenfetelli et al. (2008) proposed that functionality provided support for service functions (or SSF) that deliver the level of quality expected by online customers. By exploiting variation between online suppliers, a company's SSF can be distinct and provide the basis for achieving a competitive advantage (Homburg et al., 2002).

A product is said to be a 'search' good when there is an adequate level of information available during the pre-purchase, purchase and post-purchase and does not require physical examination prior to purchase. This can be contrasted with 'experience' goods where limited

information is available and direct experience is required to determine quality. 'Credence' goods are those such as car repairs, which cannot be assessed before or even after purchase. Klein (1998) noted that the consumer's response to the availability of information can be influenced by changing experience, such as a prior purchase.

Ultimately, the success of most organisations is dependent upon delivering customer satisfaction. Usually, this can only occur when the customer's expectations are equalled or even exceeded by their actual perceptions of the purchase and consumption process. The advantage in the case of terrestrial world situations is the customer can usually inspect the goods and employees can enter into face-to-face discussions to rectify any product quality problems which will usually ensure customer expectations are matched by perceptions.

Variables such as intangibility, the heterogeneous needs of customers and the potential variation in behaviour among employees engaged in service provision, means achievement of the same outcome is much more difficult in terrestrial service sector markets and for the supply of both tangible and service goods via the Internet. A widely accepted paradigm for examining the fulfilment of customer expectations issue is the Service Gap model created by Parasuraman et al. (1985, 1988). These researchers found that customers base their assessment of service quality on the five dimensions of reliability, responsiveness, assurance, empathy and tangibility.

Parasuraman utilised these five dimensions to develop their SERVQUAL scale for measuring gaps in service quality. Their model can be used to define the following gaps that can lead to customer dissatisfaction in an online world:

- *Gap 1* – caused by the online supplier not understanding the actual expectations of online customers.
- *Gap 2* – caused by the online supplier failing to utilise knowledge of online customer needs to define performance standards to guide employees in their provision of online services.
- *Gap 3* – caused by employees not having the skills and knowledge to engage in service provision that fulfils the organisation's online standards of performance.
- *Gap 4* – caused by dissonance between information communicated to online customers and the customers' experience of actual service provision.
- *Gap 5* – which is created by the combined influences of Gaps 1 through 4.

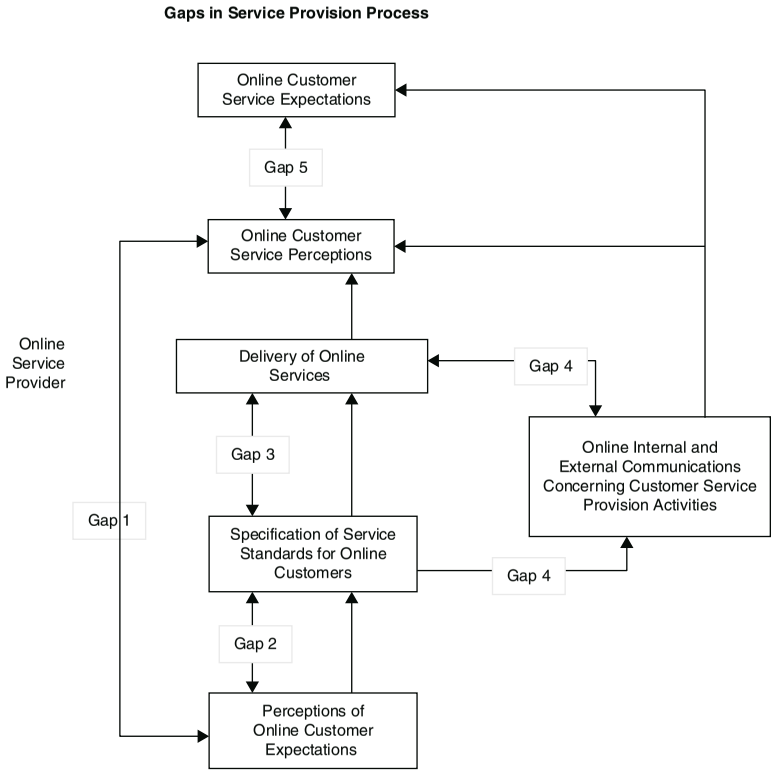

Figure 8.1 Service gap theory applied to online customers

Effective management of organisational processes is reliant upon access to adequate, relevant and up-to-date information. For most organisations, this type of information is most readily available from analysing website analytics on online customer search, purchase behaviour, returns and customers complaints. Within organisations with an effective system for using website analytics and big data to identify service gaps, it is relatively simple to assess which employees are fulfilling their assigned responsibilities whilst engaged in the provision of services via the Internet. In those cases where performance is inadequate, the organisation has various options, such as redesigning the website front-end, revising back-office systems, investing in training, adding more staff or seeking to further automate certain aspects of the service delivery process.

It is critical for the firm to access real-time data such as analytics generated by customers purchasing via the Internet. Nevertheless, there is usually the need to further enhance customer understanding by undertaking market research and regular assessments of employee attitudes and motivation. The drawback is the expense associated with large-scale surveys and the time taken to complete such projects. This means the organisation only receives infrequent updates on topics such as the changing nature of customer needs, problems that may be occurring, identification of a requirement to revise performance standards or the existence of communications dissonance between service delivery staff and customers. The nature of these requirements is illustrated in Figure 8.1 by the application of the SERVQUAL model in an online environment.

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9
Social Media

Online socialising

One of the earliest online social media applications was dating sites, which offered a new way for individuals to make contact with potential partners. The arrival of Web 2.0 acted as a catalyst for an increase in the number and types of social media platforms which can be divided into four types; namely (i) social networks, (ii) blogs, (iii) microblogs and (iv) Really Simple Syndication (RSS). The latter is less well-known than other social media. This platform filters information from numerous websites and alerts members to information in which they have registered a specific interest. RSS technology protects users from being overwhelmed by data because the software delivers an update on a regularly timed basis.

The exploitation of networks is not new to the world. People and organisations have engaged in the activity as a process of building social, commercial and political relationships in the terrestrial world for centuries. What has changed is the advent of Web 2.0. This has created a highly effective way for interactive communication on a global basis. The new online social media has not altered the aim of organisations in terms of the fundamental requirement of seeking to understand and respond to external environments. As in the case of conventional terrestrial marketing, when promotional planning online, marketers need to select the most effective social media through which to communicate information. These new tools have created opportunities that require new knowledge and proficiencies for marketers (Shambora, 2011). However, the interactivity attribute of these platforms has demanded that all employees become more capable of engaging in two-way information flows with customers and other supply chain members.

To effectively manage any social media platform, the organisation must acquire data on factors such as number of members, characteristics of members, frequency of use and purpose of use. The number of members is usually not as important as the number of active members, because these are the people who drive the activities of the platform. Organisations must be aware of any shifts in the popularity of a specific platform. Social media are easy to join and leave. Organisations have the option of the degree to which they engage in the exploitation of online social media. However, as such a high proportion of people engage in some form of online socialising it is probably inevitable that virtually every organisation will need to manage this critically important interface with the outside world (Schmidt and Ralph, 2011).

Social networking permits two or more individuals or organisations to synchronously or asynchronously interact with each other to exchange information. In the context of organisations engaging in utilisation of social media, the online network is comprised of a triadic relationship between firms, customers and community (Harris and Rae, 2009). There are essentially two types of network: those created by consumers and those established by organisations. The former involve individuals wishing to exchange information of common interest to a group of like-minded people. Organisational networks have the aim of hosting links whereby content which an organisation wishes to share can be communicated (Miller et al., 2009). The intended benefit of an organisational network is to create higher customer awareness and loyalty as a consequence of individuals participating in social media activities (McLaughlin and Davenport, 2010). Where possible, the organisation also seeks to have a positive influence on non-customers, either by communicating with these individuals directly or by stimulating e-WOM by other influential stakeholders.

According to Teerayout (2001), certain key attributes will influence customer attitudes. These include content, the publicity generated by content, number of network members, the level of interactivity and the generation of customer insights. He determined that content has the most significant influence over activity requiring a critical need to ensure the network is provided with a variety of highly interesting, relevant, up-to-date and accurate information. The most effective source of content tends to be that voluntarily contributed by those from outside the organisation.

Teerayout noted that establishing a direct correlation between network activity and customer satisfaction is extremely difficult, because other

variables such as price, promotion, service quality and the activities of competition also have a direct impact on customers. Nevertheless, the more active are the members of an organisational network, the greater is the knowledge acquired concerning customer attitudes, awareness and levels of satisfaction. This knowledge can be exploited to ensure the capabilities of the organisation are directed towards delivering superior customer satisfaction.

PLATFORM EFFECTIVENESS

Case Aims: To illustrate the issues associated with creating a social media platform which serves the needs of an online community.

In response to adverse criticism, the computer firm, Dell, added their IdeaStorm section to their website, supported by the claim 'where your ideas reign'. Within five months, IdeaStorm provided over 6200 ideas to help Dell become a more innovative organisation. Within a year, Dell had listed 35 ideas on the Ideas in Action page, signifying internal acceptance of proposals made by users (Di Gangi and Wasko, 2009).

Idea proposers have the option of classifying their idea across over 30 different categories. Other users in the IdeaStorm community are able to vote for the idea, providing indication of the popularity of each proposal. Each user has an individual profile page containing information about a user, such as the number of ideas submitted to the website. IdeaStorm does not allow users to contact other users directly.

Di Gangi et al.'s (2010) analysis of the IdeaStorm operation identified what they perceived as four key challenges facing Dell during the first 18 months following the launch of IdeaStorm; namely (i) understanding the ideas posted, (ii) identifying the best ideas, (iii) balancing the needs of transparency with the community against disclosure to competitors and (iv) sustaining the community.

To select which ideas to adopt, Dell developed new capabilities to analyse and prioritise ideas. Another issue was how to protect the ideas generated being adopted by competitors because IdeaStorm is an open environment. Consequently, Dell has sought to persuade people submitting ideas of interest to the company to enter into a collaborative relationship.

Di Gangi et al. (2010) developed the following recommendations for organisations seeking to generate external inputs into their innovation activities:

1. Create a user toolkit that standardises the process for submitting ideas.
2. Use key personnel to ensure that user ideas reach the proper internal contacts.
3. Ensure the organisation possesses appropriate competences to ensure ideas are exploited.
4. Involve lead potential users in idea evaluation.
5. Ensure the online community exhibits self-governance.
6. Ensure rapid response to ideas.
7. Support online democracy.
8. Carefully balance the disclosure of information against providing too much detail to competitors.

Customer relationships

Modern social media technologies, such as Facebook and Twitter, permit organisations to utilise interactive communication between themselves and their customers as the basis for gaining understanding of market needs. The media also enable the organisation to monitor what customers are saying about the organisation in customer-to-customer online social interactions (Kane et al., 2009). These latter interactions result in e-WOM traffic which potentially can 'make or break' an organisation.

Gallaugher and Ransbotham (2010) proposed social media interaction is constituted of three components; namely the 'Megaphone', the 'Magnet' and the 'Monitor'. The Megaphone component is organisational activities to communicate the marketing message. This permits the organisation to use social media to complement other communication channels. The Magnet component is the organisation's efforts to persuade the customer to enter into interaction with the organisation. The Monitor component involves observing the interaction between customers engaged in social media interaction. Sources of such information include wall posts on Facebook, tweets and third-party discussion forums.

Communication effectiveness can be enhanced by different media being used as promotional channels. Social media analytics involves a three-stage process of capture, understand and present. *Capture* obtains

relevant social media data by monitoring social media sources, archiving relevant data and extracting information. *Understanding* involves selecting relevant data for modelling, removing noisy low-quality data and using various analytic methods to gain insights. *Present* deals with displaying findings from the understanding phase with results from different analytics being summarised, displayed and evaluated (Weigo and Gordon, 2014).

Social media analytics encompasses a variety of modelling and analytical techniques from different fields. Sentiment analysis and trend analysis primarily support the *understand* stage. Topic modelling uses a variety of advanced statistics and machine-learning automation systems. Social network analysis is used to understand texts, tweets, underlying structure and connections. Trend analysis involves predicting future outcomes based on historical data. Applications include forecasting the growth of customer or sales numbers, predicting the effectiveness of promotional campaigns and staying ahead of shifts in consumer sentiment. Visual analytics use automated systems but there is need for human involvement to identify patterns and draw conclusions.

STARBUCKS' USE OF SOCIAL MEDIA

Case Aims: To illustrate how the social media can be utilised to enhance customer interactions and relationships.

Gallaugher and Ransbotham (2010) illustrated application of their Megaphone, Magnet and Monitor (or 3-M) model by reviewing the utilisation of social media by the global coffee chain, Starbucks. The company's CEO, Howard Schultz, led the development of the MyStarbucks Idea. The company has utilised personal dating sites to co-market concepts such as an 'espresso dating guide' and experimented with a customized music CD, burning these via in-store kiosks. The firm's own social media sites, such as MyStarbucks, complement these Megaphone activities.

Magnet activities include third-party and company-owned websites to stimulate consumers to engage in active dialogue with each other and the company. When consumers join MyStarbucks Idea they receive online behaviour guidelines such as the site is designed to generate debate wider than ideas or issues concerning local stores. To stimulate debate, the company offers contributors prizes such as discounts on purchases.

Starbucks' Monitor activities involve carefully following online discussion. To stimulate what is perceived as effective debate, top ideas are listed on MyStarbucks Idea and featured as key topics in the company's advertising campaign on YouTube. The company recognised the critical need to ensure integration of communication across social media platforms in order to optimise the benefits of the 3-M model. For example, the welcome page for MyStarbucks states that the site seeks to achieve the four outcomes of share, discuss, vote and see, thereby enabling the platform to incorporate all three elements of the 3-M model.

Starbucks also understands cross-media complementarities. For example, a deaf patron submitted a MyStarbucks Idea suggestion via a YouTube video, asking outlet staff to learn to sign 'thank you'. A Starbucks employee filmed a response via American Sign Language which was uploaded onto YouTube with a link back to the MyStarbucks Idea.

Understanding customers

Porter et al. (2011) used qualitative and quantitative research to gain an understanding of customer behaviour and motivation in relation to participation in online social media. They concluded that participation assisted individuals to fulfil the following needs:

1. *Information* – finding value in a community that provides access to information that helps them solve problems.
2. *Relationship building* – seeking to create new relationships with others.
3. *Social identity/self-expression* – improving self-awareness and cognitive connections that are created through community membership.
4. *Helping others* – finding gratification in helping others.
5. *Enjoyment* – gaining pleasure from interacting with others.
6. *Status/influence* – utilising the community to achieve influence within the community.
7. *Belonging* – achieving a sense of community attachment.
8. *Gratification* – achieving recognition for their contribution to the community.

The intensity and breadth of participation in social networks by individuals is a reflection of the social processes which also influence

behaviour in the offline world. Hence, as in terrestrial marketing, to influence online behaviour organisations do need to understand what factors influence the degree of belonging and sense of community exhibited by individuals. This knowledge, once acquired, can be used to implement actions that encourage participation in online communities. Porter et al. concluded that organisations should focus upon (i) encouraging content creation, (ii) cultivating connections among members and between members and community as a whole and (iii) creating enjoyable experiences.

Organisations must recognise there is variation between the level of interest in participating and contributing content in an online network. Hence, organisations do need to proactively encourage individuals to contribute content, rather than assuming these actions will occur without external prompts (Fournier and Lee, 2009). For Porter and Donthu (2008), a key aspect of achieving the goal of stimulating higher levels of online activity is to identify and support the information needs of participants.

Individuals are social animals and exhibit, to a varying degree, a desire to help others. This trait can influence people's desire to engage in online social networking. By contributing to the online community, stronger social ties are created, and over time the community becomes the focal point of specific endeavours reflecting commonly shared interests. In those cases where an organisation is seen as a welcome contributor to the community, this outcome will have a beneficial impact on an organisation's market image (Bagozzi and Dholakia, 2006).

PLATFORM ERRORS

Case Aims: To illustrate how organisational social platforms may fail to attract participants.

Moran and Gossieaux (2010) concluded that, although social media has resulted in the emergence of large, consumer-owned online networks, many companies have faced problems creating successful online communities. The researchers surveyed over 500 companies ranging in size from fewer than 100 members to more than a million, with company revenues from less than $1 million to over $40 billion.

Moran and Gossieaux concluded that common errors made by organisations include:

1. Community sponsors thinking that merely creating an online community will guarantee people will join.
2. Community sponsors ignoring the presence of existing communities elsewhere on the Internet and creating a 'me too' site.
3. Community-forming efforts are too small, poorly resourced and achieve no measurable impact on potential user awareness.
4. Sponsoring companies believing that potential users are so interested in entering into a dialogue that the organisation makes no effort to identify employees with whom these users can interact.
5. Sponsoring companies not recognising the need to generate community interaction and instead creating a sterile, non-welcoming social platform.
6. Sponsoring communities failing to recognise this is an interactive communication process and relying upon conventional linear communication with the social platform's community.

Marketers need to understand that communication flows through the network are under the control of the network. Furthermore, the marketer is advised against seeking to interfere with communication flows in cases when information appears online that is not complimentary about the organisation. Accompanying this willingness to exhibit a 'hands off' approach, the marketer must develop effective ways of responding to especially hyper-active/vocal platform members where these individuals are frustrating other community members.

Network promotion

The advent of social media raises the question of how to integrate conventional terrestrial promotional programmes and these new online platforms to optimise the effectiveness of information communicated. Pfeiffer and Zinnbauer (2010) undertook research to determine how the varying impacts of different media influence the number of new members joining an online network, and the number of premium site memberships purchased using the television metric of gross rating points (GRPs) to assess media weights in different channels.

Their conclusion was that television advertising campaigns have the highest efficiency in terms of attracting most users onto the online social network platform. This relationship was not sustained, however, in terms of visitors who decided to purchase premium site membership. In this latter case, maximising site membership was achieved through using advertisements on search engine websites such as Google. This would suggest search engine advertising is more likely to be noticed by those with a strong affinity for becoming regular, loyal social network members than will be achieved using terrestrial advertising. The data also indicated that where there are a number of companies in the same sector running promotional campaigns, this will lead to a much more rapid rate of new visitors to online social platforms. This suggests that as overall customer awareness is heightened, there is greater interest in online social network participation.

A critical issue confronting organisations is whether advertising on social networking sites has a positive or negative impact. For example, it has been suggested that the decline in MySpace usage occurred because the level of unwanted and unsolicited advertising messages contributed to consumers switching to Facebook (Vara, 2006). This situation would appear to indicate that advertisers must not be perceived to be creating an obstacle to consumers' enjoyment when they are visiting their favourite online social networks. Yang (2003) concluded that heavy users of social networks are more likely to exhibit a negative attitude towards onsite advertisements. Aversion is highest among individuals who are very active contributors to site content (Taylor et al., 2011).

Social network advertising differs in form, substance and method of delivery. Some are 'pushed' upon the site, whereas others rely on consumers to 'pull' content by clicking on additional sources of information. In some cases, the advertisements generate revenue for the owners of the social network, whereas others are made available as non-paid content. Facebook has not been immune to user criticism about advertising, with adverse comments about the platform permitting smaller advertisers to create low-cost, poor-quality advertisements (Johnson, 2010).

A motivation for responding to advertising is the common interest of users and their desire to exchange information on specific topics or engage in sharing personal experiences (Weber, 2009). Taylor et al. (2011) proposed that desired benefits can be categorised as content-related, structural or social. Content-related benefits cover desired information, structural benefits relate to filling personal time, and social benefits are derived from network participation. Advertising messages

have two perceived characteristics sought by site visitors; namely information and entertainment (Gao and Koufaris, 2006). Taylor et al. (2011) concluded that when social network advertisements deliver content consistent with the motivation for being online, users are more likely to exhibit a positive attitude towards the promotional message. A positive reaction also occurs when network users perceive that the advertising message delivers some form of social capital. The overall conclusion is that promotional messages on social networks must provide some sort of explicit value to users, with entertainment and information being the two most important content variables. Where there is a lack of alignment with user interests, the advertising will be seen as intrusive and unwelcome.

Another issue is the degree to which consumers respond to messages from advertisers versus messages from their friends. Yang (2012) undertook a study of Taiwanese Facebook users and concluded that (a) the advertising messages provided by close friends on Facebook will enhance the message receiver's attitudes towards the brand, and (b) the advertising messages provided by commercial sources on Facebook will enhance the message receiver's brand attitudes and purchase intentions. This result contradicts the accepted theory that message sources with strong ties, such as close friends, have greater influence than weak tie messages from a source such as a commercial organisation. Yang suggested a number of reasons why this result may occur. One possibility is that the high frequency and long duration spent online may mean the consumer is more exposed to the promotional message than in the case of terrestrial advertising campaigns.

SMALL FIRM ONLINE PROMOTIONAL ACTIVITIES

Case Aims: To illustrate how small service firms utilise social media to interact with customers.

Success in highly competitive sectors such as the tourism industry is dependent upon building close relationships with customers and strengthening customer loyalty through the delivery of outstanding service quality. The advent of social media has provided the industry with new ways of providing information, interacting with customers and gaining deeper understanding of customer needs. This situation is especially true for small- and medium-sized tourism firms, because these entities, unlike their large firm counterparts, lack the resources to implement large-scale promotional campaigns in the terrestrial media.

Heinonen (2011) researched the use of social media among small- and medium-sized enterprises (SMEs) in the tourism industry in Finland. This is a country where almost 60 per cent of people use the Internet every day and over 40 per cent of them are registered on one or more social media platforms. Almost six million foreign visitors come to Finland annually and when seeking information about destinations, rely upon personal experiences, the Internet and discussions with their relatives, friends and colleagues. Some of these discussions will be on a face-to-face basis, but increasingly information acquisition is via the social media. One of the reasons for this behaviour shift is the existence of social media platforms such as TripAdvisor and Lonely Planet, which are used by thousands of people to express their views about both their good and bad travel and tourism experiences.

Heinonen surveyed companies and consumers. The results revealed significant gaps between management perceptions and market reality. Many companies did not have an effective follow-up response system or a measurement system for evaluating social media campaign effectiveness. Only 10 per cent update their social media platforms on a daily basis, with the majority reviewing content much less frequently. Only half of the companies undertake any form of system response assessment. As a consequence, 50 per cent of firms have no idea how often people visit their website and over 60 per cent have no idea what visitors think about their online promotional activities. Most firms lack the ability to utilise online interaction to create effective online relationships with customers. It would appear that most firms use the same managerial approach when engaged in conventional terrestrial or online marketing activities. As a consequence, opportunities are being lost to exploit the online social media as a cost effective promotional channel.

Social innovation

Organisations are shifting away from retaining tight in-house control over new product or service development and collaborating with other organisations. This externally orientated approach has been labelled as 'open innovation' by the US academic, Henry Chesbrough (2003), who proposed that openness can be defined as the 'pooling of knowledge for innovative purposes where the contributors have access to the inputs of

others and cannot exert exclusive rights over the resultant innovation' (Chesbrough and Appleyard, 2007, p. 58)

The value of openness has been enhanced by the advent of social media. These permit firms to gather knowledge from consumer sites or actively attract new ideas via an online organisational platform. Chesbrough and Appleyard noted that approaches to open innovation challenge some of the basic tenets of traditional business strategy. The first tenet is, who owns the information that will be used to initiate innovation? The second is, having engaged in utilising the social media to acquire new ideas, how does the organisation achieve protection from others who also seek to exploit the same or similar concepts? In some cases, owners of platforms have sought to identify the original source of information. Wikipedia created a system to record all data entries and the editors of those entries, so that the community can see the origins of materials on the Wikipedia site. In the case of the open source code, Linux, first developed by Linus Torvalds, formal rules have been established concerning how this source code should be open.

Another critical issue when social media platforms are at the centre of a new innovation is who has control over the progression of an idea through to an end result. In the case of platforms created by an organisation, the control usually remains vested with the organisation. This is usually perceived as necessary because the organisation is investing time and resources to convert an idea into a commercially viable outcome. Nevertheless, even in this scenario, the organisation should seek to avoid the perception of absolute control, because this may create the impression among external contributors that their input is not being valued or recognised.

The dilemma facing organisations where ownership of intellectual property remains within the external community, is how the organisation can convert this knowledge into a financially viable new idea. One approach is to provide external collaborators with appropriate technology to undertake product development and then seek to retain control over the distribution of the new product. This is the model used by Apple. The company supplies the necessary tools for external developers to create new apps for Apple's iPhone but retains control over approving the new app for use in their company's mobile devices, and also shares in the revenue generated when the app is used by consumers.

The major benefit of exploiting social platforms is that the technique permits an organisation to acquire (a) a totally fresh, broader view from outside the organisation and (b) customer insights in the very critical stages of generating and evaluating new ideas early in the innovation

process. Known as 'crowdsourcing', an example of expanding the number of ideas by using social media is provided by a leading player in the Internet industry, Cisco. The company initiated their first online idea competition in 2007. This was designed to acquire new ideas for innovative IT network solutions. To ensure idea viability, participants were required to submit business plans to accompany their idea. The competition, as well as generating numerous new ideas, permitted Cisco to make network-based collaboration tools available to assist participants who worked together in virtual teams. The competition generated 2500 ideas from contributors in 104 different countries. Participants were asked to rate each other's ideas and the top 450 concepts were invited to pitch their idea in more detail utilising a WebEx platform (Ebner et al., 2009).

As organisations recognise the benefits of online open innovation, a number of different tools are being utilised involving traditional and electronic approaches. Online idea competitions function primarily as tools for idea generation. The major benefit of utilising the Internet is that information about the competition can be spread faster than reliance upon traditional terrestrial media or one-to-one interactions with other supply chain members. Social platform innovation has the potential to reach an unlimited number of possible idea sources at an extremely low cost. To achieve this outcome, some organisations' online competitions make use of virtual communities such as Facebook, MySpace and Twitter.

At the concept development stage, organisations often turn to the long-established technique of forming focus groups or customer workshops to provide a broader perspective on the range of potential opportunities about an initial idea. In contrast to online competitions, focus groups or customer user workshops involve a small number of people (typically five to ten individuals). The sessions can be undertaken online using video conferencing or participants can be brought together in a physical location.

EMPORIA

Case Aims: To illustrate how an online competition can assist new product development.

Schweitzer et al. (2012) researched an online competition implemented by Emporia, a European mobile phone manufacturer which specialises in developing new products for senior citizens. The study

compared the outcomes from a competition and the use of terrestrial focus groups in the company's new product development activities.

Older people use mobile phones to a lesser degree than younger people, perceiving the devices as too small, complicated or difficult to use. The aim of the competition and the focus groups was to identify new designs, functions, accessories, usability improvements or services that could increase the value of mobile phones for older people.

The researchers found that although the online platform provided easy access to a large number of participants, limited control over these sources did mean many ideas were not particularly useful. Also, because people were not required to provide any personal information, the company could not assess whether people submitting ideas were potential or current users. In contrast, the company had absolute control of who was recruited into focus groups and as a consequence, the ideas gathered from this source were more directly related to the attitudes and needs of older people.

People were offered a reward for submitting an idea, but not for engaging in online interaction. Online ideas tended to be much less detailed than those generated through focus group discussions. This outcome indicated that when considering involvement in social innovation, organisations must give careful consideration to (a) what information is required, (b) providing detailed structured systems for individuals providing information via the social media, (c) the most effective market research methodology for generating required information and (d) ensuring that the online system maximises interaction between participants and the organisation.

Web 3.0

Internet technology can be expected to continue to evolve as users seek to develop new ways of storing, accessing and sharing data via digital electronic channels. The first generation Internet tools, sometimes known as Web 1.0, due mainly to low bandwidth were essentially 'read only' systems. As bandwidth increased and new software was introduced the next generation of technology, Web 2.0, created 'read–write' capability. This advance permitted the evolution of social platforms to support online interaction between participants.

Having validated the power of Web 2.0, ongoing improvements in bandwidth and software have led to the creation of interfaces that

permit user-defined programmes to be added to systems; thereby achieving the aim of creating 'read–write–execute' systems. This latest advance, referred to by some in the IT industry as Web 3.0, will result in desktop programming evolving into web programming systems which will further improve online data handling capacity, communications and collaboration. A key aspect of Web 3.0 is the creation of the Semantic Web, the aim of which is to create a universal medium for the exchange of data. Once this has been achieved, the World Wide Web will have evolved into the World Wide Database. Currently the idea of the Semantic Web is possibly of greatest interest to scientists, because it will permit large-volume data sharing over the Internet that can be processed and analysed by both automated agents and humans. As a consequence researchers will be able to achieve much faster problem/solution outcomes, such as processing human genome data as a component in developing new medical treatments (Zhang et al., 2009). The Semantic Web concept will permit users to merge very large data sets stored in customised data caches. These made available on a 'data on-demand' basis can be run on portable applications, which will be extremely beneficial to those engaged in complex multi-location collaborative research projects (Kroeker, 2010). The Semantic Web idea has already been adopted by the large Internet companies. Google now supports a technology called Rich Snippets and Yahoo has created Search Monkey, both of which rely on Semantic Web concepts.

For organisations engaged in the supply of huge volumes of data via online channels, there is a need to organise acquired data into a form which can be rapidly accessed, searched and downloaded by their customers. Web 3.0 is seen as a powerful solution for permitting more effective content management involving two core components; namely (a) versioning, storage and maintenance of the master copy of the files and (b) permitting online users to rapidly access and extract data. Effective content management requires a Content Interpreter at the centre of the system. The Interpreter's role is converting large volumes of stored digital data into a form which can be comprehended by humans (Galea, 2007).

Galea proposed that features demanded of an effective Content Interpreter are:

1. Complete integration of the Interpreter and the content repository where data are stored.
2. Scalability, in order that the Interpreter is able to handle whatever load demands are placed on the system.
3. Speed of processing which requires that the Interpreter must be able to execute queries in real time.

4. Configuration flexibility, in order that the Interpreter can be restructured or redesigned to both respond to new operational requirements.
5. User friendly, in order that the Interpreter can be used by people who do not have an advanced degree in IT.

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10
Blogs, Tweets and Apps

Blogs

A wiki, or 'work in progress', is a fluid and collaborative collection of web pages where everyone in a given community can add, delete or modify content. Possibly the most successful example of a wiki is Wikipedia. The term 'blog' is a shortened version of the combination of 'web' and 'log', and is most frequently equated to an online diary or journal. Like other Web 2.0 tools, a blog can be spearheaded by one individual, but may include contributions by others that can evolve into a dialogue.

A business blog is a powerful way to drive positive word-of-mouth recommendations. Blogs enable companies to establish relationships with their target audience, thereby increasing customer loyalty and third-party advocates. A blog is considered to be successful when the conversation on the blog turns into online 'buzz'. Uses for a business blog include a forum to offer tips and advice, publish an incentives program that encourages referrals, hold contests, answer questions, showcase customer stories and publically respond to stakeholder comments.

In many consumer markets, blogs have become a new form of interpersonal communication for millions of people to publish and exchange information, as well as to establish personal networks. The technology has enabled people with limited programming skills to create web content, rapidly communicating their views, positive or negative, about their experiences in relation to the utilisation of products and services.

Muarya (2011) proposed that blogs exhibit the following attributes:

1. *Limitless* – unlike in terrestrial environments, there are no boundaries in the online world in terms of factors such as geography or socio-economic systems.
2. *Rapid* – customers are empowered with 'reply to all', forwarding their views to anybody with whom they are in contact.
3. *Anonymous* – people can use an alias.
4. *Effective* – opinions, especially negative comments, can influence an organisation's image.
5. *Trusted* – consumers place more conviction in other consumers' communications than in an organisation's promotions.

One of the highest levels of blogging is in the leisure and tourism sectors, where potential travellers are relying on the Internet to seek destination information. As a consequence, marketers in hospitality and tourism firms must understand consumers are increasingly influenced by blogs devoted to discussion of their products and services. In many cases, an informed employee can make a more effective contribution to the cyber community than any attempt by a firm's PR agency. Employees must exhibit a high degree of integrity and not engage in spurious claims or present themselves as guests. The marketer should employ editors to review content and examine submissions to avoid potential mischief and negative manipulation by their competitors.

Research by Wang (2012) indicated that an effective travel blog should generate empathy, communicate appeal, provide guidance and facilitate interpersonal interaction. He suggested that positive attitudes among readers are created by information and visual images that generate excitement and curiosity. It also appears that travel blogs which induce readers to generate emotional or intellectual identification with blog writers are more likely to help in building an effective destination image.

Blogs allow customers to rapidly find out about changes in products or services offered by an organisation. For example, a launch of a new product or change in pricing policy can instantly be communicated to a large audience, whereas mailing a bulletin or using conventional promotional campaigns might take several weeks to organise. A blog can be used to rapidly respond to a crisis, such as an organisation's deliveries being disrupted by extreme weather. The advantage of a blog for building stronger customer relationships is that individuals can leave

comments and get their voices heard directly on the site without having to go through a Webmaster or administrator. This advantage is further complemented because the blog supports two-way communication.

Educational blogs

Blogs provide a platform to communicate detailed information about complex products or services. As a consequence, some sectors such as the pharmaceuticals industry are beginning to perceive the medium as a new way of communicating with healthcare professionals and stimulating debate. As the largest healthcare market in the world, it is unsurprising that the US is the leading player in the utilisation of educational blogs (Alkhateeb et al., 2008).

A major source of medical blogs are doctors themselves who own their own blog sites, which outnumber those operated by the pharmaceutical companies. Although less common is the move to use podcasting to enhance the effectiveness of educational blogging activities. Since physicians are more likely than the general population to utilise their iPod for educational purposes, this group are the primary target for building links between suppliers of healthcare products and their customers in the medical profession.

Patients are an important target for owners of medical blog sites. These are either established by a patient group or are a collaboration between a healthcare provider and a patient group (for example, the MySpace Cure Diabetes Group). These sites may focus on a specific disease or treatment, or assist patients in finding, rating and recommending sources of medical treatment. A major risk for the members of the medical profession interacting with patients via blogs is whether the courts may perceive a physician–patient relationship has been created. Where this has occurred, then the advice given by a physician could lead to a medical liability lawsuit.

THE RISKS

Case Aims: To illustrate some of the dangers associated with the inadequate management of blogs.

Although blogs and other forms of online interaction between organisations and their customers are appealing, Cawley (2011) posited that there is a need to be aware of the following risks:

1. *Activists may hijack the channel* because social media are public platforms which permit the audience to submit information that can harm the organisation's market image.
2. *Blogging may endanger trademarks* because members of the audience have no interest in protecting the organisation's intellectual property and seeking legal redress may be impossible.
3. *Spammers may abuse the channel* by using the organisation's site as a billboard for their activities.
4. *The organisation is ill-prepared to respond in real time* leading to problems where customers pose questions and become angry when there is not an immediate response.
5. *Generating content may be a drain on resources* where the blog generates a high level of response, managing the discussions can involve a heavy commitment from staff.
6. *The power of social media may be inadequate* which means the organisation must take great care to measure the cost–benefit metrics of the activity and terminate campaigns which are not productive.
7. *Social media may create new problems* where comments made unintentionally anger the audience and damage market image.
8. *Blogs may distort conventional promotional claims* which can arise because, during interactions with the audience, the content unwittingly moves away from the more carefully crafted wording used in mainstream promotional activities.

Social CRM

Trainor (2012) posited that the advent of social media such as blogs requires a new approach to utilising the Internet to manage CRM. This involves an integration of traditional customer-facing activities with collaborative conversations and thereby enhancing customer relationships. Greenberg (2010) suggested that social CRM is not a replacement for traditional CRM, but instead should be viewed as an extension that adds the social functions, processes and capabilities that address the interaction between the customer and the firm.

To fulfil customer needs, the marketer must understand how to utilise technology-enabled resources such as e-mail, Interactive Voice Response (IVR) systems, and sales force automation linked to systems for customer analytics and database marketing. The primary purpose

of these technologies is to improve employee efficiency and effectiveness, and enhance data capture. For example, Salesforce.com offers a product called 'Sales Cloud' that provides tools to manage accounts and contacts (data capture), leads and opportunities (data analysis), and e-mail and calendaring (efficiency and effectiveness). This capacity is critical because customers are encouraged to interact and share information (Jayachandran et al., 2005). Furthermore, as social media becomes a dominant platform upon which to manage the CRM process, the capability to exploit the interchange of information will become a key aspect of creating and sustaining customer loyalty.

The other valuable aspect of social CRM technologies is that they can be used by the organisation to obtain an early warning, via an online network, of product performance or service quality problems long before these have reached the stage where the customers are beginning to formally complain or start switching their loyalty to another supplier. Armed with this information, the company can implement remedial action to recover the situation and immediately communicate the actions being taken to the organisation's customers.

B2B AND SOCIAL MEDIA

Case Aims: To illustrate variation in the degree to which social media is being utilised in B2B markets.

Although many of the world's major consumer goods companies are now using social media such as blogs to interact with customers, this trend is not yet reflected by large companies operating in B2B markets. Brennan and Croft (2012) concluded the most popular social platform in these latter markets is Facebook. Nevertheless, there was significant variation in the level of interactive activity. For example, Intel and Cisco appeared to have high levels of engagement with fans, numbered in many thousands, whereas smaller companies in their sample could only number their fans as a few hundred.

There was a similar picture on Twitter, where companies such as Oracle are actively using 40 or more official Oracle feeds as well as other contributions based on the brand names of other Oracle group products. Here again, smaller firms were much less active. Typically active companies use Twitter to headline press releases, new products, developer events, new appointments, new blogs and videos.

Results for video-sharing were similar with the larger firms being the dominant players. However, smaller firms did appear to be better represented on this type of social platform, even though their achieved hit levels appear to be extremely low. Firms such as Oracle are using platforms such as YouTube to complement video streaming on their own corporate websites. Podcasts, although a medium which only offers one-way communication, are popular among large companies, but again are rarely used by smaller firms. A similar pattern was apparent for blogs. For example, Oracle is heavily committed to the medium, often posting 400 blogs or more in a single month.

Brennan and Croft concluded that many B2B firms, especially those which are relatively small, appear to be relying on traditional sales-based marketing approaches, supplemented by participation in trade fairs and developer events. This can be contrasted with social media leaders who are actively exploiting platforms blogs, videos and podcasts on both their own corporate websites and through cross-referencing information provision on platforms such as Twitter and Facebook. Furthermore, it is apparent these leaders are actively using the social media to generate conversations with potential and actual customers as the basis for building closer market relationships.

In a world where open innovation is becoming increasingly popular, blogs are seen as an effective tool through which to gain insights from customers about possible new product concepts. In their study of utilising blogs in New Product Development (NPD), Droge et al. (2010) concluded that organisations need to recognise that some blogs are more influential than others. The researchers concluded that NPD managers can usually rely upon just observing the original posting and about three days' worth of reader comments. The most useful content is concerned with customers providing scenarios of perceived product usage, and reaction to company information on proposed benefits compared with competitors. Their analysis suggested the primary use of blogs is during early the commercialisation stage, with the bulk of postings being concerned with potential product benefits, performance and features.

Although the NPD manager hopes to receive positive blogs, there is real benefit in negative feedback where this reflects potential customers perceiving flaws that have been overlooked by the company. It can be the case that contained within these negative comments are suggestions of possible solutions or alternative ways of utilising the proposed new product.

Twitter

Twitter is a real-time information network that connects people to the latest information and reflects what they currently find interesting. The platform is known as a micro-blogging tool because users are limited to a maximum post of 140 characters. Twitter makes it easy to find forums which permits users to follow conversations in progress. Tweets can include additional information, deeper context and embedded media. Twitter can be used by organisations to connect with their customers in real time, and this permits rapid sharing of information with people interested in products and services. The channel can be exploited to gather real-time market intelligence and feedback. Furthermore, the system offers another online opportunity for building relationships with customers (Mamaghani, 2013).

In 2009, the market research website, Quantcast.com, reported an average of 23.5 million monthly users on Twitter. By 2012, this figure had risen to 87.4 million monthly users. Exploiting this social platform is not a simple process. This is because firms are seeking to be noticed amid the thousands of tweets per hour by others and by random users. Hence, organisations must become proficient in the language of Twitter and learn to utilise hash tags, re-tweets and mentions to expand message reach (Geho and Dangeloe, 2012).

The rise of mobile applications and smartphones has changed the landscape of how people access Twitter. The majority of Twitter users now access the network via mobile phones. Tweets are usually read in real time, as opposed to being looked at hours after they are posted. Applications such as Tweetdeck and Hootsuite provide a dashboard view of the user's Twitter account. This helps organisations identify and sort tweets, re-tweets, mentions and direct messages. Websites such as Hashtags.org provide organisations with the ability to search for keywords related to their business and gain valuable information about when certain topics are trending and how popular they are.

Twitter differs from traditional SNSs, such as Facebook and LinkedIn, in important ways (Virk, 2011). Unlike Facebook and LinkedIn, users have 'followers' on Twitter, not 'friends'. This permits tweeters to follow anyone they like. There is no approval process, as there is in Facebook, where users may reject people they do not know or do not like. Initially, Twitter functions very much like traditional SNSs with friends and family following tweets. Gradually, complete strangers may also join a list purely because they like the content being tweeted. Tweeters' followers

tweet other tweeters because they like the content of the tweets, not necessarily because they know the individual on a personal or professional level. This means connections are based on content rather than relationships. The ability of people to locate content is achievable because tweets are searchable.

Apps

A mobile application (or app) is a software application that runs on a mobile device (such as a smartphone, tablet, iPod), and has an operating system that supports standalone software. They are available through application distribution platforms, which are typically operated by the owner of the mobile operating system, such as the Apple App Store, Google Play, Windows Phone Store and BlackBerry App World. Mobile apps can come preloaded on the mobile device, as well as being downloadable by users from mobile app stores or the Internet. Increasingly, organisations such as banks and energy companies are providing free apps to enhance the quality of their service provision. Mobile apps help users by connecting them to Internet to obtain services which in the past were more commonly accessed via a desktop or notebook computer (Wang et al., 2013).

Having launched the iPhone, Apple provided impetus by assisting developers to create new apps. This move has been followed by the other smartphone producers. The creation of commercially successful apps by content providers is extremely difficult. The market is fragmented and few producers have created apps that generate a significant revenue flow (Karla and Broker, 2011).

Branded goods companies are now moving from more traditional mobile initiatives, such as conventional website advertising and text message campaigns, to use apps to communicate brand messages which enhance images and service satisfaction. For example, Proctor & Gamble offers a Pampers app, with helpful information for parents and entertainment for babies. Advertisers do not need opt-in permission because consumers download the apps on their own initiative (Bellman et al., 2011).

In terms of impact, these apps can:

- Have a strong effect on brand attitude, and a smaller but positive effect on purchase intention.
- Cause shifts in brand attitude and purchase intention.

The most successful type of app tends to be capital-intensive to produce. This is because designing an informational app that consumers find useful in their daily lives is more difficult than building an experiential app or adapting an interactive game. Another problem for marketers is that the general success of apps means the consumer is facing ever increasing choice over apps available. To ensure a new app is noticed may require a separate persuasive advertising campaign. Also, there is the requirement to ensure the consumer retains the app. This is because most people only keep about 40 apps on their smartphone at any one time.

As with other digital media and devices, the acceptance of apps as a source of promotional information varies by socio-demographic groups and countries. Chiem et al.'s (2010) analysis across five European countries revealed a number of critical success factors for marketing via apps that permit standardisation across markets in the Czech Republic, Germany, Switzerland and Italy. One factor is that the consumer must perceive the app offers utility. The most successful apps are those which support the overall brand position of the advertiser. Another factor is that consumers must be interested in owning a smartphone and hence high smartphone penetration has a direct impact on the development of a country's app market. Even in this situation, however, an app's market may be limited by consumer privacy concerns. The Swiss exhibit the highest concerns over privacy, whereas Italian consumers exhibit few concerns and are highly receptive to apps. In all markets, discoverability is a common challenge. Consumers need to be able to sift through the clutter of numerous apps to find a brand's app offering. The most successful examples of apps were supported by companies that utilised cross-channel promotions via the web, in-store displays or other channels to increase awareness.

SOME APP EXAMPLES

Case Aims: To illustrate the nature of apps being made available to consumers.

Donovan et al. (2012) examined apps to illustrate the practical benefits which they offer. In terms of their assessment, their guidelines were:

- Who is the target user?
- What is the issue being addressed?
- What is the performance environment?
- What are the unique features?
- What is user feedback?
- What are other potential applications of this technology?

Coach's Eye by TechSmith Corporation (http://itunes. apple.com/us/app/ coachs-eye/id472006138?mt=8)

This is a performance support app for amateur athletes wishing to improve their physical performance. The Coach's Eye app enables coaches and athletes to record a video of a physical motion (such as a golf swing) and use various features including slow motion review and drawing tools to analyse the clip. Features of Coach's Eye include:

- Interactive videography.
- Drawing tools.
- Audio voice-over.
- Video tagging and search.
- Sharing via e-mail and YouTube with other Coach's Eye users.
- Video timeline.

EpicMix by Vail Resorts (http://itunes.apple.com/us/app/ epicmix/ id395375487?mt=8)

This is a performance companion app for amateur skiers seeking to track, share and improve their ski experience. With a free subscription to EpicMix service, users can track their performance, compare their performance with other EpicMix users and access information about the environment both on and off the slopes. Features of EpicMix include:

- A personal performance dashboard.
- Access to a leader board.
- Connection to a social network.
- Access to up-to-date local information.

Cloth by Seth Progres (http://itunes.apple.com/us/app/ cloth/ id464306737?mt=8)

This a wardrobe and clothing support tool marketed toward young professionals, especially those who travel, have extensive wardrobe options and go to events requiring specific dress. Cloth allows users to take pictures of their outfits, categorise them and search for them by weather type, event or style. Features of Cloth include:

- Add photographs of outfits.
- Tag entries with key information.
- Search for or browse outfits by weather conditions, season and location.
- Share insights with other members.

Apps utilisation

As more smartphone applications are developed, and an increasing number of organisations use apps to communicate with customers, it is imperative that developers understand why certain people are more likely to use specific types of applications and what they expect. Some demographic data is available on apps preferences. Lane and Manner (2012) posited that there is a need to understand the influence of personality. They used the Big Five Inventory personality tool (McElroy et al., 2007) to determine how the five traits of extraversion, conscientiousness, agreeableness, neuroticism and openness to experience influence the utilisation of apps.

The limited ability to utilise socio-demographics to determine apps utilisation was confirmed by Yang's (2013) research on young American consumers. There was no clear correlation with the demographic variables of gender, age, race, education or income. He found young consumers download and use more mobile apps when they hold favourable attitudes toward the benefits offered by mobile apps. A factor of influence in relation to young consumers' attitudes is their use by other people in their lives, such as parents, friends and peers.

Digital innovation

Kim et al. (2012) posited that creation of new apps offers a number of alternative strategic innovation opportunities by using the building blocks of product, process and platform. They perceived that there are two types of innovation patterns, namely convergent and divergent pathways. An example of divergent innovation is *eBay Mobile* which supports transferring the content and function of eBay website mobile phones. *BeatRider* is a button-touching game that matches the keys with the music. This type of rhythm video game has existed for a long time. What has changed is the music. In the traditional game, a list of music songs are embedded in the application, but in *BeatRider*, music songs can be uploaded by the user. Process change offers new service by switching the mode of interaction or provision. *TwitterTime* provides short messages posted by users, displaying them automatically. The application offers the original Twitter service,

reading and writing tweets, but *TwitterTime* is a view-only, automatic slide show.

Platform–product change reconstructs both platform and product. The features of the new proposition may possibly only be available via the new platform. An example is *Lightsaber Unleashed*. The user chooses one pair of characters and light sabres of *Star Wars*, and by swinging their iPhone, the sound effects of a light sabre are emitted. *Hotel Booker* provides hotel information and the functions of a hotel booking website. The distinctive feature is the way the app executes the hotel search, using real-time automation of nearby location searching and enabling the user to find hotels in their immediate area. Another example is *iPet Dogs*. This is a pet raising game; adopting a pet to feed, to play with and look after through its life. Unlike the existing games, *iPet Dogs* is social- and community-centric, where users all over the world become friends and participate in raising each other's pets.

Apps innovation provides the basis for new services. Source and content are provided within an integrated, connected and interactive platform. Core integration means original application sources are unlikely to be changed. *i-Clickr PowerPoint Remote* is an app that permits utilisation of an iPod or iPhone to make and control a PowerPoint presentation. *Cooliris* provides a collection of images and videos from a variety of websites such as Google, Bing, Ask and YouTube. By connecting products from several websites this provides a greater variety of images for downloading. *Shopper* is a shopping management service that offers a collection of the matching process between the user's shopping list and retail store layout. The list can also be shared with friends.

Product fusion combines different data to provide a new type of product. *Layar Reality Browser* is an augmented reality service that overlaps local information on top of the camera's reality browser. Users can find and navigate to the nearest spots in the real scenery on a mobile phone camera. Process fusion combines sources to create a new process. *QRooQRoo* is a barcode scanning service for recognising goods, searching for them on websites and comparing their prices from several shopping malls. Product–process fusion combines sources from both product and process to create new types of content. *iFooty* provides a league match information product as well as a chat room to discuss league matches.

SALES PROMOTION APPS

Case Aims: To illustrate how apps can provide new approaches for the promotion of goods.

The advent of mobile apps offers marketers new ways of communicating with customers and enhancing marketing campaigns (Cameron et al., 2012). One example of how sales promotions can be made more impactful is by permitting consumers to download in-store coupons. The market research company, Nielsen, compared the mobile app coupon users with customers who did not use the digital offering. Some of the key findings on mobile app coupon customers are as follows:

1. Tend to be the more loyal shoppers.
2. Early adopters of the new mobile application.
3. Younger consumers.
4. More likely to have children.
5. Do not restrict their use of discount programmes to the mobile app.

A sales promotion app permits mobile customers to plan when and where they want to review and clip coupons. The app is used in advance of a shopping trip to plan purchases, as well as during the shopping process. Most coupon clipping is done prior to the actual shopping trip. In store, customers used the app to review coupons previously clipped more often than they look for new coupons.

Business apps

Initially, many of the early apps were targeted at the marketing of branded consumer goods. More recently, other sectors such as banking and finance have begun to exploit apps for both managing business processes and interacting with customers. A key reason for this trend is the growing number of 'mobile workers' who use mobile devices in their daily work. These mobile workers are also consumers and perceive apps as an effective way of undertaking tasks such as mobile banking (Darsow and Listwan, 2012). It is necessary, however, for service providers to recognise that consumers are more likely to use their mobile devices to check the news or weather than to undertake tasks such as checking their bank account.

Banks believe their corporate practitioners who use consumer mobile banking for their personal needs expect access to apps that support mobile links to undertake complex transaction tasks. This gives individuals the ability to stay in control of financial accounts anytime, anywhere, using a smartphone, tablet or other mobile device. Authorised users can access critical information and take immediate action, such as approving a wire transfer, releasing a financial file or inactivating a user who has left the company.

Apps improve fraud monitoring by supporting increased vigilance. Alerts and notifications can be sent immediately to managers, giving them the ability to act quickly over any suspicious activity. Another benefit is that the workplace remains accessible in situations such as adverse weather or a disaster. By utilising mobile devices, designated personnel can still perform key activities, such as undertaking banking operations remotely from home or other offsite locations.

Corporate customers want to receive text messages with brief, immediate information. Mobile communication with the bank tends to focus on exceptions and involves simple, bite-size interactions, such as checking an account balance or moving funds from one account to another. Decision-makers who are travelling can benefit by checking their mobile device and take action, such as approving a payment, while away from their desk. Workers who are primarily office-based with ready access to a PC may not require mobile banking for day-to-day operations. Over time, it can be expected that apps will become more widely available and used to support more complex activities such as wire transfers, releasing payrolls and initiating supplier payments.

Healthcare apps

The healthcare sector has been an early adopter of apps, with doctors tending to purchase apps from branded 'app stores' to use in their daily working lives. The nursing profession has been more cautious, tending to rely upon apps introduced by their employer (Moore et al., 2012). In the US, nurses use apps to access drug handbooks and dose calculators in clinical practice. There is evidence, however that some nurses prefer to use handheld tablet computers to access data and to support drug administration recording, vital-signs monitoring, risk assessment and bed management. Most apps that support healthcare calculations or clinical decisions are accompanied by disclaimers. There is increasing recognition that healthcare apps might require regulation. The US Food and Drug Administration (FDA) has proposed guidance on when apps

start to become medical devices and require medical device certification. Another app available in the US is a mobile drug reference tool for physicians. Doctors can use an iPad or smartphone to access drug prescribing and safety information for thousands of medications, check for the potential for harmful drug–drug interactions with patient's other medications, and review potential side effects.

APPS IN USE

Case Aims: To illustrate how medical apps can enhance the provision of healthcare.

At the University of Pittsburgh Medical Centre (UPMC), eVisits is a tool for facilitating online interactions between patients and physicians to eliminate the need for a visit to a physician's office, urgent care centre or emergency department. Nearly 400 primary care and internal medicine physicians participate in eVisits. UPMC physicians can access the patient's medical records from any Internet-enabled device. Patients receive a response usually within minutes and usually not more than four hours. Where a prescription is required, this is transmitted electronically to the patient's pharmacy. Women between the ages of 30 and 49 are the most frequent users of eVisits, with patients between the ages of 50 and 64 being the second highest group of users (Williams, 2012).

Baptist Health South Florida created PineApp to help patients quickly scan the door-to-doctor wait times at nearby Emergency Departments and urgent care centres in the Baptist Health network. The system also provides driving directions and contact information for the facilities via a mobile phone or iPad. At the Jane Philips Medical Center in Bartlesville, nurses are preventing medication errors and adverse drug events with the help of an iPod app. Nurses carry the device in their pockets. When medications are administered, they use the device to scan the barcode of each drug, the patient's barcode and wait for the device to signal that the right medication is being given. The system uses information from the patient's electronic health record for verification. The app also has the capability to track specimen collection, infant care regimens, care interventions and care team communications to manage the patient's care plan. In 2011, the hospital pharmacy dispensed about 750,000 drugs. The hospital's medication error rate was just 1.84 per 10,000 doses.

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11
Online Retailing

Evolving industry

Pure play and clicks and mortar retailers seeking to optimise the performance of their online operations need to focus on the key aspects of the sequential transaction process to maximise the volume of successful transactions (Rowley, 1996). This sequential process ensures the customer successfully progresses through each of the activities of (i) searching, browsing and identifying goods of interest, (ii) selecting and ordering, (iii) making a secure payment and (iv) the delivery of purchases.

In terms of the relative importance of the online retailing sector, this still remains smaller than revenue generated by terrestrial retailers. However, virtually all the growth in retail sales in recent years has been in online markets. The market research firm, Forrester (www.forrester.com), has estimated that online retail sales will grow at a 10 per cent annual growth rate from 2010 to 2015 in both the US and Europe, reaching $279 billion and €134 billion respectively in these two markets in 2015.

Early online customers tend to be younger people from higher socio-demographic backgrounds (Mintel, 2003). According to Venkatraman (1994), potential customers during their initial use of the Internet exhibit a higher intent to purchase intangible goods such as car insurance, rather than tangible goods such as consumer white goods. This trait either reflects a greater willingness to purchase goods because the buyer has a limited need for further information about service goods, or alternatively the suppliers of services offered via the Internet are more effective in persuading customers to enter into online transactions than tangible goods marketers.

Rodgers and Harris (2003) concluded that gender influences the extent and pattern of participation in online shopping, with women being less emotionally satisfied than men. However, as consumer populations acquire more extensive experience of online purchasing, this tends to be accompanied by a decline in behavioural differences between gender and socio-economic groups (Brown et al., 2007).

Shim et al. (2001) considered that variables important in terms of influencing online buyer behaviour include:

1. *Transaction services* – security, product guarantees, safety, privacy and service.
2. *Convenience* – related to website speed, freedom from problems and the presence of sensory experiences, such as personalisation and recreational benefits.
3. *Merchandise choice* – product information, comparative shopping opportunities and the product line choice.

Nikolaeva et al. (2009) estimated from a sample of US online retailers that approximately 70 per cent survived for at least five years. This is a relatively high survival rate given the problems pure play Internet retailers face versus large established clicks and mortar operations. These latter organisations can exploit economies of scale in purchasing, have greater financial resources and have already established strong consumer awareness for their organisation. Nikolaeva et al.'s study did indicate that pure play online suppliers in retail categories where 'touch and feel' are important have a higher failure rate than quasi-commodity categories such as books, music, videos and computer software.

Timing of market entry has minimal influence over business survival rates in online markets, indicating that there is limited benefit from being a 'first mover', possibly because Internet retailing is still a relatively new market scenario and ongoing advances in technology are offering new shopping experiences. As a consequence, 'first-mover burnout', in terms of keeping up with both technology and customer behaviour changes, would appear to be a not infrequent problem for many early entrants into online retailing (Min et al., 2006).

In the case of medium- or high-value goods, online shoppers spend a considerable amount of time cross-checking offers and acquiring information from various websites before making a final decision. This behaviour does not appear to be repeated in the case of low-value goods. In this latter situation, lowest possible price remains a more effective selling point than providing more information (Brown et al., 2007).

According to Roberts et al. (2003), many consumers continue to engage in terrestrial shopping because of the social contacts this activity provides and a prevailing preference to handle goods prior to reaching a purchase decision. In terms of seeking to predict how consumer preferences towards terrestrial versus online shopping might change, Bourlakis et al. (2008) suggested that lessons learned from ubiquitous computing might be reflected in behaviour shifts in relation to the Internet. Ubiquitous computing concerns the use of seamless integration of technology to enhance the users' purchase experience. These authors proposed that ubiquitous retailing will similarly involve the use of technology to create a seamless online shopping experience. An example of how this can be achieved is provided by semi-automated ordering mechanisms whereby consumers are able to scan product codes directly into their online weekly shopping list. Another example is the advent of customers being able to use a mobile communications device to make an automated payment.

WHEEL OF E-TAILING

Case Aims: To illustrate how a terrestrial concept has apparently transferred across into the online world.

A long established aspect of terrestrial retail management theory is the 'Wheel of Retailing' (or WOR) (Hollander, 1960). This is the idea that (i) new retailers are initially more interested in acquiring customers than in making profits, (ii) the easiest way to attract new customers is to offer lower prices and (iii) as the business matures, the retailer becomes more interested in making profits than gathering customers. Hence mature businesses will shift towards generating higher profits by charging higher than average prices.

The issue arises of whether the WOR model is transferable into the world of online retailing (Massad et al., 2010). There is only a limited availability of data on the relevance of WOR to online retailing. Nevertheless, it would appear that one of the most long-established online retailers, Amazon, supplies a broader range of goods and is able to command higher prices than smaller or more recently established online operations (Gurtler and Grund, 2008).

Strategy

Clicks and mortar retailers have the advantage over pure play operations, because the former can leverage their existing brands and customer base when seeking to build an online customer loyalty. Furthermore, available financial resources and market knowledge are likely to be greater than for a pure play start-up. New pure play retailers need to expend huge sums on promotional activity in order to attract customers. Existing terrestrial retailers usually need much smaller sums of money to build online customer awareness.

Incremental revenue opportunities for clicks and mortar operations exist from being able to engage in cross-channel marketing between their terrestrial and virtual channel operations. Furthermore, many of the extensive competences and experiences developed in traditional terrestrial retailing operation can often be transferred into the online trading environment. An example of this advantage is in utilising existing expertise and knowledge to create an effective online order fulfilment and distribution infrastructure (Chan and Pollard, 2003).

Although e-commerce presents companies with new opportunities to reduce costs, access new markets and improve customer service, clicks and mortar companies will need to develop strategies to proactively manage the integration of their Internet operations with existing terrestrial activities. Some degree of business transformation is usually required in order that a move online can enhance the revenue generation of existing terrestrial operations and avoids sales cannibalisation. Doolin et al. (2003) proposed that the various options include:

1. Using the Internet to enhance the marketing of goods via existing terrestrial channels.
2. Creating a separate Internet-based channel and related infrastructure.
3. Integrating the Internet channel with existing channels thereby providing customers with a choice over where to shop.
4. Moving to Internet-only sales as this activity becomes the dominant channel in a specific retail sector.

Moving retail operations online involves changes to business processes, information systems and organisational practices. The more ambitious or extensive the e-commerce proposition, the greater is the scale of organisational change required. Venkatraman (1994) proposed that organisations can choose a change management model along a continuum ranging from limited changes in IT operations through to a

complete IT-enabled business transformation. With increasing organisational change, IT becomes a core competence providing foundations upon which re-engineering business processes, redesigning business relationships and redefining the scope of the business will be based (Badrinarayanan et al., 2012)

In the case of a pure play retailer, customer attitudes are primarily determined by the impact of visiting and utilising the firm's website. As a consequence, pure play online stores can establish category standards in terms of product assortment, delivery schedules, customer service, product recommendations, user reviews and payment options. In contrast, the management of online shops by multi-channel retailers is made more difficult because customer online shopping attitudes have already been influenced by customers visiting the firm's terrestrial outlets.

Wang et al. (2009) concluded that prevailing attitudes toward a multi-channel retailer's physical outlets have a critical role in the formation of attitude toward the retailer's online store. Furthermore, trust in the online store of a multi-channel retailer is often based upon the degree of trust in its existing terrestrial operations. As a consequence, the multi-channel retailer should seek to achieve image congruence between their physical and online stores, paying attention to how their customers' online environment expectations have been influenced by their terrestrial experiences (Steinfield, 2002).

Doolin et al. (2003) proposed three possible approaches might be adopted by clicks and mortar operations when moving online:

1. Evolutionary change involving a conservative approach in exploiting the Internet.
2. An experimental strategy in which there is a constrained approach to what products or services are made available online and the degree to which an online purchasing facility is offered to customers.
3. Revolutionary change whereby the company engages in radical transformation based around a focus on exploiting the Internet as the probable future source of core revenues.

Brynjolfsson and Smith (2000) researched competition between clicks and mortar and pure play retailers. They noted that the Internet lowers consumer search costs, allows consumers to search across a much wider range of products and discover niche products that they would not previously encounter in any terrestrial environment. Competition can be intense where consumers are able to exploit low online search costs to compare prices of frequently purchased goods. An exception to this

generalisation usually applies where the clicks and mortar operation supplies high-value/high-priced goods. In these cases, customers often restrict their online search to a few highly visible products, may be less price sensitive and typically do not perceive the online world provides an adequate substitute for terrestrial shopping.

Brynjolfsson and Smith concluded that the successful large, pure play Internet firms are those which invest in maximising service quality by actions such as creating call centres, supporting the option of the customer obtaining goods by visiting a local centre instead of the goods being shipped to the home address and offering free shipping. These authors suggested one possible effective strategy for pure play retailers is to differentiate themselves from terrestrial competitors by assisting consumers to purchase niche products that have high search costs when locating these goods in traditional terrestrial outlets. This strategy infers that to generate revenue growth, Internet retailers should stock more niche products, assist consumers to discover these goods by introducing even more effective IT-enabled search tools, and train customer service representatives in helping consumers locate niche products (Froehle, 2006).

Another opportunity available to pure play retailers may exist when a major proportion of their revenues is from popular products also available in terrestrial outlets. These pure play operations can use business analytics to identify promotional programmes which reflect geographic and socio-demographic differences in purchase patterns and response to specific merchandising events. The same approach can be utilised in relation to pricing by offering online discounts of a type designed to mainly appeal to a specific customer segment.

Pentina et al. (2009) concluded that clicks and mortar retailers facing both multi-channel and pure play competitors should seek to optimise their online performance in order to protect their customer base and total sales revenue. These researchers suggested successful multi-channel retailers will be those who are able to evolve an effective strategy for managing what Arnould (2005) described as the 'Big Middle' philosophy, which aims to optimise performance in both the terrestrial and online worlds. Although there is no single dominant business model which can guarantee this outcome, successful multi-channel retailers appear to be those who capitalise on their pre-existing unique resources and market positioning to establish a multi-channel competitive advantage. Pentina et al. proposed that ongoing advances in business analytics offer new opportunities for enhanced target marketing and the ability to more rapidly respond to changes in consumer preferences.

ASSESSING STRATEGIES

Case Aims: To illustrate how different terrestrial retailers have implemented strategies to enter the online world.

Doolin et al. (2003) examined how different terrestrial retailers in New Zealand implemented and further evolved their Internet marketing activities. The study revealed there was no single dominant strategy which was superior to other alternatives.

One retailer initially used the Internet in a support role, offering access to information concerning topics such as product range and prices. Over time, the company added an online sales facility which replicated the transactional facilities available in the organisation's terrestrial outlets. Another firm used a similar strategy but used the online sales as a separate channel in relation to the product range available in the company's terrestrial stores.

In a similar study Kaufman et al. (2007) concluded that retailers must ensure their provision of Internet services is adequately supported by IT infrastructure. In their study, one retailer realised that the poor performance of their online operations was in large part due to the inadequacies of existing IT systems. The solution was to adopt a more revolutionary IT strategy to upgrade their business information and process systems.

Doolin et al.'s study highlighted a number of factors that will influence companies' decisions to develop an online presence. One is competitor or peer pressure, which was a significant driver in firms who have yet to invest in developing an Internet channel. Another factor is a lack of appropriate in-house technical expertise, because this can cause a firm to delay their entry into online markets. Uninformed or risk aversion attitudes among senior management can inhibit implementation of an effective Internet retailing operation.

Consumer behaviour

Girard et al. (2002) and Korgaonkar et al. (2004) proposed a product classification model based on the variables of search, experience and credence to define online purchasing behaviour. It is suggested that the minimal online search occurs for products whose qualities a consumer can determine with little or no inspection prior to purchase. These are

products, known as Type 1 goods, about which the consumer has adequate existing knowledge and little additional information is required prior to reaching a purchase decision.

Klein (1998) proposed that Type 2 goods are those where the customer lacks personal experience and obtaining information on key features of the product by search is more costly or difficult than acquisition through product usage. Lal and Sarvary (1999) proposed experience products may exhibit 'digital attributes', which can be communicated at very low cost via the Internet. In contrast, products with non-digital attributes are those where physical inspection is necessary prior to purchase. The implications of purchase behaviour associated with Type 2 products which exhibit digital attributes is that suppliers can effectively use the Internet to provide additional information to assist potential customers evaluate available offerings. In the case of new or first-time user customers, suppliers will still need to create a point of terrestrial contact to convert customer interest into a purchase.

Bakos (1997) and Lynch and Ariely (2000) concluded that shopping online can reduce search costs and, as a result, buying Type 1 products online is easier and often preferred over making a terrestrial purchase. Korgaonkar et al. (2006) posited that because Type 2 products can rarely be evaluated without use, these products will involve the potential customer in incurring higher search costs and they will usually perceive online purchasing to be a high risk proposition.

Korgaonkar et al. concluded that differences in consumer perceptions may exist between pure play and clicks and mortar operations. In the case of goods such as clothing and perfume there was a higher preference to purchase these from a discount retailer or a department store rather than from a pure play operation. With Type 2 products, such as a mobile phone or a television, when purchasing online the preference is to buy these from a pure play operation, rather than clicks and mortar retailers.

Mitchell (2001) posited that in an online world perceived risks include physical risk, financial risk, time risk, convenience risk and psycho-social risk. Vijayasarathy (2002) and Forsythe and Shi (2003) concluded that online shoppers may develop unfavourable perceptions of online buying due to concerns over the security issues associated with providing credit card details via the Internet. To overcome these risks the Internet supplier must seek to build trust among potential customers. Lee and Turban (2001) identified specific 'trust building' constructs. These include ability, integrity, benevolence, technical competence,

reliability and the effectiveness of third-party financial transaction management. These authors stressed the need for effective policies in relation to issues such as user-friendliness, website reliability, credit card loss assurances, warranties policies and the return of merchandise.

Online suppliers can overload customers with information unless provision is accompanied by efficient and systematic browsing mechanisms. Effective search and browser facilities that assist customers in rapidly finding items and thereby allowing individuals to optimise their search activities will be perceived by consumers as delivering added value. Cheng et al. (2009) proposed the provision of information should go beyond the functional description of the supplier's offerings and seek to arouse curiosity or create perceptions of novelty.

LESSONS FROM TESCO.COM

Case Aims: To illustrate how a large supermarket chain has evolved an effective online shopping system.

Tesco is the largest supermarket chain in the UK and launched their first online service proposition in 1996. The system permitted customers to place orders by telephone, fax and e-mail. Tesco.com was established in 2001 and soon evolved into a website which offered multiple product categories. Online consumers are required to provide personal data and delivery information. Customers owning the Tesco Clubcard loyalty card are encouraged to key in the card number to access data on all their previous purchases. Since 2001, shoppers at Tesco have been able to do their online shopping through both PCs and mobile devices (Enders and Jelassi, 2009).

The Tesco.com website offers several functions to optimise the online shopper's experience. These include:

- *Express Shopper:* customers can create their shopping lists on the Tesco.com website, just as they would when visiting a store.
- *Lunchbox Tool:* designed for customers wanting to order complete lunch meals and to customise their sandwich orders.
- *My Favourites:* displays a list of all the items that a customer has purchased and re-order is achieved by clicking on the item.
- *Online Recipe Book:* customers can browse all the ingredients needed for a recipe and order by clicking on the ingredients list.

- *Organic Box:* this offers preselected baskets of organic products in different sizes.
- *Season's Choices:* this displays items for special events, such as Christmas, a barbecue or a party.

Shoppers can use the special note function next to each product if they wish to specify a product quality preference. When an item is out-of-stock, they are offered the option of a suitable substitute or skipping that item. In-store and online prices are the same and online customers receive the same discounts or promotions as those offered to terrestrial shoppers. Payment for online purchases is by credit or debit card. Billing only occurs once the entire order has been picked. Initially, Tesco charged a £5 fee for home delivery, regardless of order volume and delivery time. Fees now differ according to the day of the week and the two-hour time delivery slot chosen by the customer. Items are delivered in plastic bags, with substitute items marked so that customers can inspect them on delivery and accept or reject them.

Tesco.com opted to avoid building new specialist warehouses by introducing a local store picking model. By delivering orders from the customer's local stores, no delivery journey is longer than 25 minutes. To ensure undisturbed shopping for terrestrial customers, Tesco.com varies the picking activity of these staff in relation to store traffic. A computer algorithm determines picking sequences to ensure picking trolleys are evenly distributed across the store.

On the basis of their analysis of the Tesco case, Enders and Jelassi (2009) posited that certain key lessons can be identified. These include:

1. Learn by doing and evolve the e-business strategy over time.
2. Proactively resolve any online/offline channel conflicts that emerge within the organisation.
3. Accurately allocate the costs to each channel because this permits effective analysis of each operation and avoids concerns that one channel is absorbing overheads that should rightly be allocated elsewhere within the operation.
4. Provide online consumers with a customised and simple shopping experience.
5. Exploit online shopping data to enhance both an organisation's Internet and terrestrial operations.

Online trust

According to Morgan and Hunt (1994), trust leads to commitment and loyalty. In some respects online trust is very similar to offline trust, in that the customers' activities facilitate formation of a positive purchase intention and increased repeat purchasing. Nevertheless, the Internet has created potentially uncertain situations in relation to issues such as purchasing goods without prior experience or an ability to inspect the goods. This means trust building by online retailers is a fundamental and critical aspect of their entire operation. Online consumers tend to prefer to buy well-known brands because these are supplied by companies consumers have come to trust through prior terrestrial experience. As a consequence, major brands have often been able to achieve higher online sales and command a premium price relative to their lesser known competitors (Chaudhuri and Holbrook, 2001).

For trust to exist, the consumer must believe the online retailer will deliver goods and fulfil service quality expectations (Jarvenpaa et al., 2000). Customers exhibit the rational behaviour trait of placing greater trust in larger firms. To increase consumer trust, many e-retailers have associated themselves with third-party assurance seals, such as TRUSTe, BBBOnline and Verisign (Chen and Dhillon, 2003). The seals communicate that the online retailer complies with a third-party's specific standards and hence can be more highly trusted (Bramall et al., 2004).

Ruparelia et al. (2010) concluded that trust levels in Australia are influenced by brand reputation, brand name familiarity, word-of-mouth recommendations, website design, website information, returns policy, country of origin, consumers' prior product experience and promotional activity. The attributes of security and privacy found to be critically important in other studies (Lightner, 2004) were not found to be as important to Australian consumers. The researchers believed this difference can be attributed to the fact that as consumers become experienced in online shopping their level of trust in suppliers increases to the point where concerns over security and privacy become significantly reduced.

ONLINE COMPLAINT MANAGEMENT

Case Aims: To illustrate the importance to responding positively to online customer complaints.

In any retail environment the way in which the supplier handles a customer's complaint will influence the customer's future purchasing behaviour. Typically, the customer wishes to be treated in a way which they perceive is fair in relation to the three dimensions of procedural, distributive and interactional. When a customer perceives the complaint is handled fairly and satisfactorily, trust tends to be strengthened.

Pizzutti dos Santos and Von der Heyde Fernandes (2011) determined that prior evidence of how terrestrial retailers respond to complaints are also found to be valid in relation to online customers. With online retailers, three aspects of justice (personal treatment, resolution process and tangible results) explained 85 per cent of variance in consumer satisfaction. Resolving of complaints to increase online trust is critical. This is because trust is more important than familiarity and prior purchasing experience, and will determine the probability of the customer becoming a repeat purchaser. When consumers perceive the company to have handled their complaint negligently this will often lead to website switching and negative e-WOM.

Pricing

Similar to terrestrial retail environments, online customers utilise price as an indicator of perceived quality of goods. Higher-quality goods are expected to be offered at a higher price. As prices decline, this is usually perceived as an indicator of lower quality. Lower quality does not infer non-saleable goods, merely relative to other goods in the market the performance of lower-priced goods will be exceeded by higher-quality/higher-priced goods.

In terrestrial scenarios, the customer can visit the retail outlet to gain information to assist their determination of relative quality. This opportunity is not available to customers purchasing goods online. As a consequence, not only is price relative to other offerings an important determinant of customer expectations, where prices does not appear to be equated to quality (such as highly discounted goods) or quality expectations are not met upon usage (for example, actual quality proves to be less than expected), these situations can influence trust and customer loyalty.

Another critical issue facing the online retailer is whether prices should be equal to or lower than equivalent goods in the terrestrial world. This issue is relevant to both clicks and mortar and pure play suppliers. The

Internet provides customers with much more information than is usually available in terrestrial outlets. As a consequence, customer empowerment to negotiate over price is significantly increased. Furthermore, most consumers have an expectation that online goods will be available at a lower price. Given increased price-sensitivity of consumers when buying online, this situation will require the supplier who is selling goods at a high price to create a higher-value proposition based upon benefits such as superior performance or quality of service (Verma and Varma, 2003).

Where customers lack knowledge, there is the risk that lower price is used as an indicator of poorer quality. When customers are not expecting lower online prices, suppliers will need to build trust and confidence that delivered financial saving will not mean the customer is being supplied with lower-quality goods. One strategy for building trust is that of co-branding. This involves activities such as marketing products or services via a third-party online supplier which has established a reputation for integrity and high service quality. Another approach is to bundle together offered products or services in a way which is perceived by the customer as adding value to the overall purchase proposition (Clay et al., 2001)

The advent of price comparison sites such BizRate.com and Shopping.com, where prices of numerous suppliers are available and consumers are able to comment on their online shopping experience, provide new platforms through which to influence a firm's reputation. These sources are especially valuable where consumers are reluctant to make their purchase decision purely on the basis of lowest possible price (Pan et al., 2004). The reason for this attitude is that many online vendors are relatively new and unknown. Hence, to consumers their lack of prior experience increases their perception of the risks associated with purchasing goods from these online suppliers (Ba and Pavlou, 2002). The other potential source of customer concern is those cases where, unlike the world of terrestrial shopping, the online purchaser is required to pay first and then has to wait for the subsequent delivery of the goods.

This issue of perceived risk means well-known online suppliers are more trusted than new or smaller companies. As consumers gain experience of purchasing from well-known suppliers this re-enforces their preference to avoid switching to a less well-known firm even in cases where the latter is offering lower-priced goods. As a consequence, well-known suppliers are often able to command higher prices than smaller or more recent entrants into online markets (Smith et al., 2000).

Luo and Chung (2010) analysed pricing policies of firms on the BizRate.com website. They concluded that online retailers charged lower prices when the number of retailers offering the same product was

high. Their study confirmed intense competition places a downward pressure on prices. In their view, however, high reputation stores often did not take full advantage of their established market reputation and probably in many cases could have successfully charged higher prices. The researchers concluded the benefits of established reputation are more pronounced in the case of expensive products. In these markets less well-known suppliers are forced to offer a much bigger price discount in order to generate customer interest. One way of reducing the scale of the price discount is for less well-known online operations to offer other enhanced value options such as free shipping or a free, no questions asked, returns policy.

Most products have life cycles and early buyers are usually the least price-sensitive, whilst buyers who delay their purchases until later in the life cycle tend to be more price-sensitive. The ease with which online shoppers can learn about new products and the prices of existing products can result in a shortening of product life cycles (Trichy et al., 1999). As a consequence, in the case of new products sold online there may be a need to reduce prices and accept a lower margin more rapidly than in terrestrial markets.

Within most terrestrial markets the number of competing firms tends to remain unchanged. In online markets the number of competitors can change extremely rapidly. This places greater pressure upon online retailers to be prepared to make more frequent price changes. Online firms charging the lowest price will attract price-sensitive shoppers. These individuals in the US are estimated to constitute 13 per cent of all online buyers. In targeting this group, suppliers must be confident a significant increase in sales though offering a price discount will compensate for reduction in profit margin which accompanies the decision to reduce prices (Baye et al., 2004)

The ability to reduce online prices usually results from cost savings in areas such as marketing and distribution (Garicano and Kaplan, 2001). Most studies of online pricing tend to focus on goods such as books, CDs and DVDs. Brynjolfsson and Smith (2000) compared prices of books and CDs sold via terrestrial outlets and the Internet. They concluded that compared to terrestrial outlets, online prices were 9 to 16 per cent lower. To gain further understanding of pricing of more heterogeneous products, Tang and Gan (2004) analysed the pricing of toys in the terrestrial outlets of clicks and mortar operations with pure play suppliers. They assumed clicks and mortar operations may wish to coordinate prices across different channels to minimise competition, and on average charge higher prices than online pure play suppliers.

The researchers concluded that this was an invalid idea. They found there was very little difference between online prices of clicks and mortar operations and pure play retailers. The clicks and mortar toy retailers charged similar prices in both their online and offline operations for very popular items, although higher prices for less popular toys were charged in their terrestrial outlets.

SELF-SERVICE TRANSACTIONS

Case Aims: To illustrate how the advent of the Internet is impacting the retailing of goods purchased via self-service.

One of the first applications of how new technology can enhance the provision of self-service was the advent of the ATM in the banking industry. Effective self-service applications benefit both customers and suppliers. Customers are offered convenience, efficiency and ability to control aspects of the transaction process, such as product selection. The gain for the supplier is a reduction in administrative expenses whilst providing a new channel through which to engage in customer relationship management (Kasavana, 2010).

With more than 70 per cent of US consumers now shopping online, accumulated experience of utilising self-service terminals and online buying is leading more people to accept web-based self-service facilities. In 2007, consumers spent more than $525 billion at self-checkout lanes in supermarkets, ticketing kiosks and other unattended retail kiosks in locations such as shopping malls or airports. Many of the self-service systems involve utilisation of an Internet link (Kasavana, 2008).

Web-based self-service terminals are increasingly being offered, permitting the supplier to offer additional services. These include:

1. Upselling offering add-ons, modifiers and/or service bundling options.
2. Incremental revenue generated by tracking customers' prior purchases as the basis for making suggestions about additional items to be added to a current purchase.
3. Loyalty building by offering online loyalty rewards.
4. Cost reduction for both the buyer and seller, due to savings achieved by a self-management of the purchase transaction.

The two most commonly used self-service platforms are vending machines and kiosks. Vending machines focus on product presentation and delivery. Kiosks are usually devices which are limited to dispensing information and related services. The advent of the Internet permits vending machines and kiosks to offer a broader range of services, especially in relation to self-managed purchasing. Currently, most vending machines handle only cash transactions, whereas kiosks predominantly utilise electronic payments based upon web-based transactions. In terms of differences between vending machines and kiosks, these include (Kasavana, 2010):

1. User interface of vending machine incorporates push-buttons for service selection whereas most kiosks rely on touch-screens.
2. Information provision by vending machines is limited whereas kiosks linked to the Internet act as a much greater knowledge source.
3. Product display in vending machines traditionally places products behind a glass front, whereas kiosks linked to the Internet offer a variety of products in digital format.
4. Systems architecture in vending machines is relatively simple, whereas kiosks are normally PC-based devices running a Windows or Linux operating system and can be linked to a range of computing platforms.
5. Payment processing is primarily by cash in vending machines, whereas kiosks utilise electronic payment transactions linked to a remote server.
6. Services in vending machines are limited to the product inventory in the machine, but kiosks can exploit the Internet to offer access to numerous other services from a range of remote providers.

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12
Online Service Firms

Service issues

Many service businesses are involved in the provision and transfer of information. Consequently, some of the first companies to generate significant revenues from the World Wide Web were service firms. Examples include online retailers, the travel industry, finance organisations and search engines. Further opportunities arose following the digitisation of data which created new opportunities in the entertainment industry. Internet technology improvements in areas such as download speeds and multi-media software tools caused many service businesses to migrate online as a whole range of new opportunities became apparent. The Internet permitted greater real-time and synchronous interactions between customer and provider. Additionally, as an interactive medium, the web allowed the merger of mass production and mass customisation to deliver the added customer benefit of one-to-one marketing.

Compared to terrestrial service provision, e-services permit customer needs to be met more effectively, efficiently and at a lower marginal cost, whilst simultaneously offering larger volumes of real-time information (Torkzadeh and Dhillon, 2002). The downside is online service firms may face higher price competition than tangible goods suppliers. This is because of the difficulties in differentiating a firm's services from those of other online providers (Shapiro and Varian, 1999). Consequently, success in the delivery of online services will usually require a very careful analysis using big data to identify which market segments are less price-sensitive and which segments consider service quality is significantly more important than lowest possible price (Verma et al., 2004).

To enhance the service marketing process there is the need to examine the issues of (a) the total purchase experience that can be delivered without the need for terrestrial interaction between customer and provider service and (b) the extent to which service provision can be customised (Ziller, 2004). This taxonomy yields the four options illustrated in Figure 12.1.

The differing natures of the four options are:

1. *High customisation/pure play service* – all aspects of the service transaction are undertaken online and the provider is able to customise the service to suit individual customer needs (such as an online medical diagnostic service).
2. *Standardisation/pure play service* – all aspects of the service transaction are undertaken online and the provider makes available standard products to all customers (such as a downloaded television programme).
3. *High customisation/mixed service* – the provider is able to customise the service to suit individual customer needs, but one or more elements of the service transaction will involve terrestrial customer–provider interaction (such as the purchase of property).
4. *Standardisation/mixed service* – the provider delivers a standard service but one or more elements of the service transaction will involve terrestrial customer–provider interaction (such as the purchase of replacement tyres for a car).

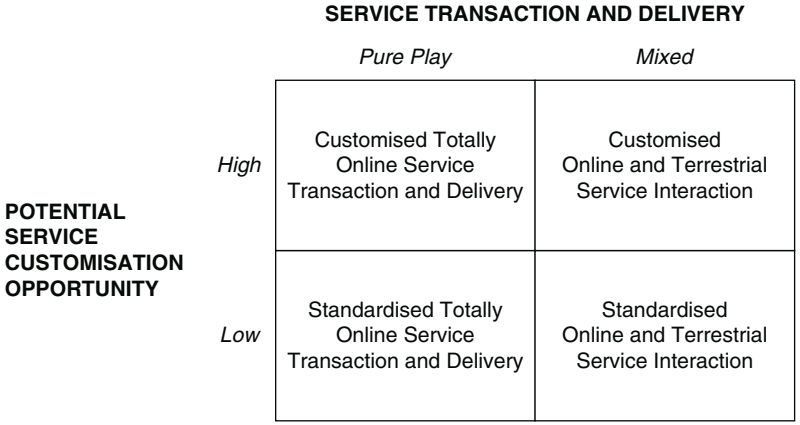

Figure 12.1 Service provision options

SERVICE UNBUNDLING

Case Aims: To illustrate how the Internet is causing a change in the management of transactions in a long-established service sector.

The Internet has created opportunities for new service providers to enter long-established, traditional markets. In many cases, the arrival of these new providers has led to an unbundling of services within a sector. An example is provided by the domestic housing market. Home owners and potential buyers are more empowered by being able to access a wealth of additional information about houses featured on estate agent and third-party websites. While some consumers may prefer an estate agent to handle the majority of the transaction, others take on more responsibility for themselves. This latter goal has been made easier by the use of desktop publishing software to self-create more detailed promotional materials than those which the estate agent is prepared to create.

Demand for the unbundling of services has resulted in the emergence of discount agents (or brokers). These new entities are prepared to offer a reduced commission in return for the home owner performing some of the selling activities. Another catalyst has been the emergence of Multiple Listing Services (or MLS). The MLS proposition is seen by some agents as a source of competition and by others as an effective way of achieving greater market coverage (Lieb, 2010).

Service quality

The unique properties associated with service goods of intangibility, heterogeneity, inseparability and perishability caused researchers to conclude that in many markets achieving differentiation relied upon suppliers' capabilities to offer superior service quality (Teas, 1994). Parasuraman et al.'s SERVQUAL model (1985) is based upon the concept that service quality can be assessed by examining whether a gap exists between customers' expectations and perceptions. In the case of a pure play service provider, the basic SERVQUAL model will provide the information to determine whether actions need to be implemented to further enhance service quality. The potential problem facing a clicks and mortar provider is that factors influencing customer expectations may differ between online and terrestrial customers. In those cases where this situation is thought to apply, then the organisation will need to

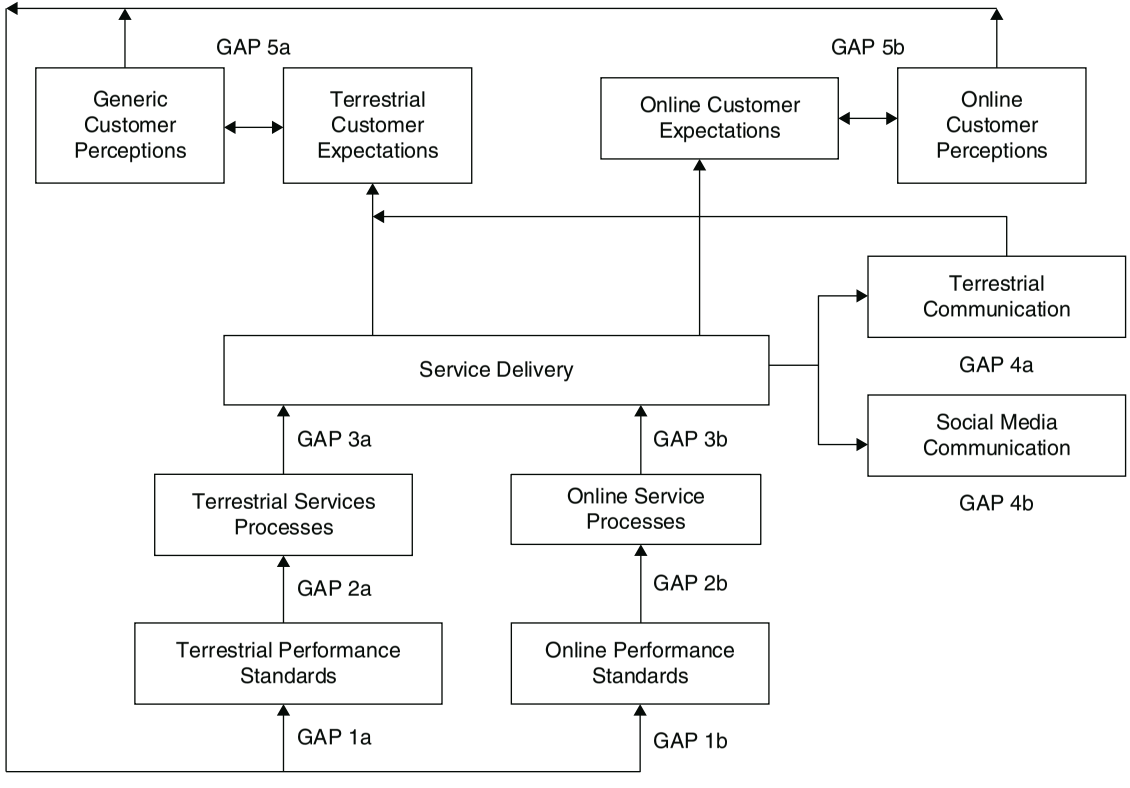

Figure 12.2 Terrestrial and online service gap model

modify the SERVQUAL model to accommodate the need to differentiate between different types of customers. One such approach is illustrated in Figure 12.2, in which the organisation will need to assume that the following gaps exist:

Gap 1a – not comprehending the actual expectations of terrestrial customers.
Gap 1b – not comprehending the actual expectations of online customers.
Gap 2a – a failure to translate perceptions of terrestrial customer expectations into service quality standards.
Gap 2b – a failure to translate perceptions of online customer expectations into service quality standards.
Gap 3a – a lack of resources or inadequately skilled employees results in an inability to deliver services which meet terrestrial performance standards.
Gap 3b – a lack of resources or inadequately skilled employees results in an inability to deliver services which meet online performance standards.
Gap 4a – communicating information to customers via terrestrial channels which causes them to be misled or misunderstand service provision.
Gap 4b – communicating information to customers via social media channels which causes them to be misled or misunderstand service provision.
Gap 5a – a combination of Gaps 1a–4a, determining terrestrial customers' overall assessment of how their expectations have been met.
Gap 5b – a combination of Gaps 1b–4b, determining online customers' overall assessment of how their expectations have been met.

Adaptive marketing

The Internet, big data, mobile communications and social networks have together generated a massive increase in information available which many firms have yet to effectively exploit. This lack of exploitation can be explained by a number of factors, including (Day, 2011):

1. *Organisational rigidities* – there is a tendency to rely upon existing capabilities long after these are obsolete.
2. *Lagging reactions* – slow recognition of and responding to changing market circumstances.

Heterogeneous customer needs in service markets, and the heterogeneous nature of organisational capability, offer a number of alternative marketing strategies through which to achieve and sustain competitive advantage. However, as many service markets change over time, the route to achieving sustainable competitive advantage requires that organisational capabilities are of a dynamic nature. A dynamic capability is 'a capacity of an organization to purposefully create, extend, or modify the resource base' (Helfat, 2007, p. 5). Teece (2010) proposed that dynamic capabilities should include:

1. Sensing environmental changes.
2. Responding to change transforming available resources or adding new resources.
3. Selecting the business model for delivering maximum value to customers.

Day posited that in relation to marketing capability there is a need to (a) offer a distinct and compelling customer value proposition and (b) exploit innovation as a strategy for offering improved value to customers. Value delivery and innovation assist firms to develop a loyal customer base to protect them from competition. These components are only of benefit where the organisation has the ability to implement marketing strategies as a consequence of deep insights into complex, diverse and fast-changing markets.

As summarised in Figure 12.3, the nature of the marketing strategy and strategy implementation will be influenced by two variables. One is whether the firm generates opportunities and ideas based upon an internal versus an external orientation. The other factor is whether the organisation relies upon exploiting existing current competences or decides that long-term performance requires a willingness to evolve, revise and develop new competences more appropriate for future market conditions.

Organisations must also be vigilant in acquiring new knowledge and skills. Levinthal and Rerup (2006) proposed that vigilance is constituted by a heightened state of awareness, curiosity, alertness and a willingness to act on incomplete information. Such organisations can be characterised by (i) a robust market orientation, (ii) knowing how to ask the right questions and (iii) being able to identify what they need to know. To achieve these three outcomes, vigilant firms will use multiple data sources to clarify ambiguous signals.

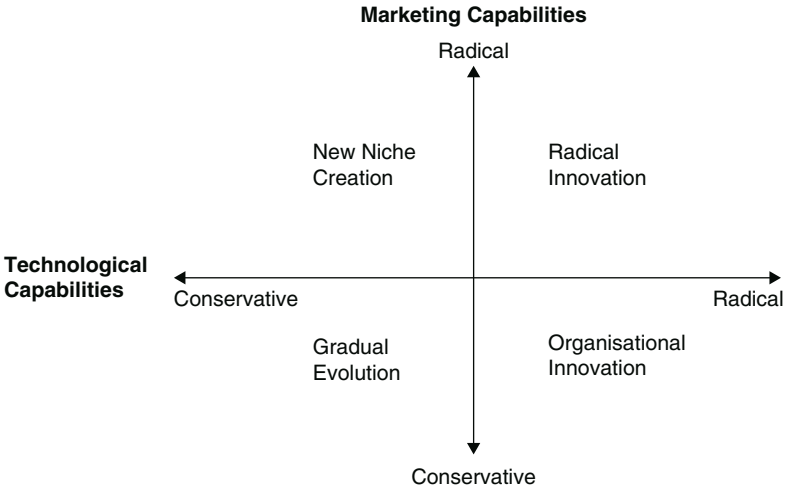

Figure 12.3 Online market response strategies

Online relationships

Gutek and Welsh's (2000) C-O-P model depicts service provision as an interaction between three elements; the customer (C), the service organisation (O) and the individual service person (P). The model distinguishes between the service relationship and the service encounter. Service relationships are characterized by a tight C–P link indicating that customers engage in repeat transactions. Service relationships are embedded in a web of social attachments, such as friendship and mutual support between the customer and a person within the service provider (Uzzi and Gillespie, 2002). An embedded relationship leads to a sense of mutual obligation, trust and goodwill between the customer and the service provider, creating high customer loyalty, repeat sales and a willingness of customers to refer new business to their service provider (Reichheld, 1993). Alternatively, a service encounter may involve customers in repeated contact with a service organisation without perceiving themselves in a personal relationship with a specific individual. These service encounters are characterised by a tight C–O link. Little or no social embedding occurs, which results in customers being more likely to switch providers.

Customers may be satisfied with a self-service relationship, thereby providing opportunities for service automation (Gutek et al., 2002).

Known as a self-serve technology (or SST) the Internet increases the opportunities to automate service provision of services. Meuter et al. (2000) concluded that customers are particularly satisfied with SSTs when they solve a time-critical need, are better than the alternative or when the system performance expectations are exceeded.

Offering customers access to services via the Internet can be expected to increase customer satisfaction in those cases where the technology delivers benefits such as 24/7 access and zero waiting time. A somewhat different situation arises where the terrestrial relationship is based upon a personal interaction between the client and a specific individual. A move to the provision of services via the Internet can result in a reduction or destruction of the C–P link. Schultze (2003) posited that in both C–O and C–P scenarios there is a need for the service organisation to determine how best to utilise the Internet to further enhance customer satisfaction and deliver higher service quality. His suggestion is that solutions will exist somewhere along a continuum, ranging from minimal online service provision through to delivery of all aspects of the service relationship utilising an automated self-serve system.

DOUBLE-EDGED SWORD

Case Aims: To illustrate how data exploitation can influence customer perceptions.

The Internet and big data have assisted the service marketer to acquire real-time information about individuals which permits use of one-to-one marketing. This outcome has the potential to facilitate co-creation and stronger relationships. In sectors such as banking, the marketer should avoid using additional customer information merely to create more efficient service delivery. Emphasis should be assigned to creativity and intuition to exploit information to develop more innovative services.

Innovation can be implemented by exploiting big data on transactions, overlaid with demographic, geo-demographic and lifestyle data. When technology is used at the customer interface this permits further real-time interaction with individual customers. Where information is merely used for internal process improvements, Internet and big data marketing can become a double-edged sword.

Proença et al. (2010) examined online banking practices in Portugal. They concluded that factors that strengthen relationships include (a) the intensity of Internet use, (b) the diversity of access locations and (c) the diversity of Internet applications made available. The researchers noted that customer attitudes concerning new technology will be confirmed by whether a bank is seeking to upgrade service provision or merely using the Internet to reduce delivery costs. Where the latter is perceived to be the case, then customer relationships and trust in the provider are likely to decline.

DISINTERMEDIATION

Case Aims: To illustrate how the Internet can alter the role of intermediaries in a long-established market system.

One of the first sectors impacted by the Internet was the travel industry. Travel agents faced the risk of 'disintermediation' because their role of linking suppliers to customers may not be needed (Silvia, 2008). The Internet allowed the airline industry to circumvent the role of the travel agent, removing the need to pay commissions to the travel agents. This benefit, however, has been eroded because by using third-party websites, travellers can rapidly locate which airline is offering the lowest prices on a route at any point in time (Dilts and Prough, 2003).

Along with disintermediation, the Internet has permitted new third-party players such as Expedia.com to enter the travel market, offering access to search engines that identify lower cost travel and the latest discounts available through making late bookings for accommodation. Silvia proposed survival of terrestrial travel agencies requires greater focus on the role of becoming travel consultants and offering new services in niche markets (Smith and Rupp, 2004).

Online information

The Internet offers greater and faster access to information which can assist individuals in optimising their purchase decisions. An important role of the Internet has been to assist developed nations in sustaining knowledge-based economies. Knowledge-based services include global delivery of client services in professions such as accountancy and law. Singh et al. (2003, p. 31) defined knowledge services as the 'exchange

of problem domain-specific knowledge to inform decision activities of specific e-business processes, facilitated by an infomediary using intelligent software systems and the Web Services Architecture'. These researchers identified critical roles of the knowledge-based aspect of online markets to include (a) *discovery* of buyers and suppliers to fulfil the each other's requirements, (b) *facilitation* of information flows leading to successful transactions and (c) *support* of decision processes contributing towards closer relationships between providers and their clients.

Infomediaries coordinate and aggregate information flows to support e-business processes, thereby providing an independent source of information that can be utilised by both buyers and sellers (Grover and Teng, 2001). Knowledge management has also benefited from the creation of 'intelligent agents'. These are software systems that permit automation of data analysis and can assist in the speed with which new information can be incorporated into both automated and human decision-making (Papazoglou, 2001). Infomediary enabled e-marketplaces include public e-marketplaces, such as ChemConnect (http://www.chemconnect.com/), which are hosted by third parties. In contrast, private e-marketplaces are hosted by a central hub company, such as Hewlett-Packard, to create efficiencies and cost-effectiveness for participants.

In terms of service suppliers making information and knowledge available online, Kuruzovich et al. (2008) posited that system components must provide:

1. *Information needs* – in terms of the information required by the customer.
2. *Online information retrieval system* – to permit the customer to acquire the required knowledge and information.
3. *Relevant support* – which reflects the structure and usability of the online system that ensures customers can access required information and knowledge.

The other critical aspect of the online system is to ensure an appropriate fit between the level of needs, the actions of individuals to fulfil these needs and the optimal execution of desired outcomes. Kuruzovich et al. proposed that there are three possible outcomes; namely (i) a decision to purchase, (ii) increased offline search activity and (iii) online search satisfaction. The assumption is that where information and knowledge needs are not met, this leads to customers deciding not to purchase.

Information and knowledge from online sources is likely to be positively associated with a subsequent decision to purchase. This is because customers are in a position to make an informed decision with regard to knowledge acquired from a supplier or from an infomediary. Given the ease with which product, service and price comparisons can be acquired through an online search, this situation is likely to assist customers to screen out non-viable alternatives and more rapidly move towards completion of the search phase.

Financial services

Long before the advent of the Internet, the financial services industry was using electronic communication systems to manage the flow of information between institutions and clients. The industry was one of the first to recognise the new opportunities that were offered by storage, access and transfer of data using computers, perceiving the Internet as providing new opportunities to lower costs, exploiting this channel in place of telephone, fax or cable-linked computer networks. Technological advances and faster broadband speeds have assisted organisations such as the banks to migrate their customers from terrestrial to online transactions, with a consequent decline in the operating costs (Allen et al., 2002).

The insurance industry has been somewhat slower in exploiting the Internet. In part, this reflects that certain aspects of insurance provision such as handling and progressing claims are often complex issues, which are difficult to automate and often require one-to-one terrestrial interactions. The Internet has had the greatest impact in the emergence of online consumer price comparison sites operated by both third-party intermediaries (such as www.gocompare.com) and insurance companies. The speed with which consumers have accepted this approach to purchasing insurance reflects the fact that industry had already moved from using terrestrial offices to the provision of services via call centres.

Many of the world's stock markets moved to the electronic trading of shares in the 1970s, following the proven success of the launch of the US Nasdaq in 1971. This was followed by automated trading in which sophisticated software algorithms have replaced humans in share trading. The scale of activity has been amplified by the Internet, although there is ongoing reliance on the telephone when undertaking major trades. The world's bond markets have been somewhat slower in the

move towards Internet-based trading. Until recently a similar situation existed in the world's foreign currency markets.

The adoption of the Internet across the financial services sector was accompanied by the entry of new types of financial services providers such as pure play banks, brokerages, mono-liners and aggregators. These latter operations established third-party websites that permitted consumers and businesses to compare financial services, such as loans, saving rates and prices for insurance coverage. The Internet has also led to organisations in sectors such as utilities, retailing and telecoms adding online financial services to complement their traditional business operations (Vennila, 2011).

Given the high probability of price-based competition in online financial services markets, Verma et al. (2004) proposed that successful organisations are those which seek a 'best of breed' solution by combining effective terrestrial markets services with online-only features to create new e-service offerings. For example, the US brokerage firm, Charles Schwab, offers the ability to access timely and in-depth company financial information through www.schwab.com, whilst simultaneously maintaining bricks and mortar facilities to allow customers to engage in face-to-face discussions with the company's financial advisors.

Verma et al. undertook a study to evolve a framework for understanding customer choice in online markets. The results indicated the importance placed upon price varies across different segments. Customers who exhibited medium to low usage of services and only rarely access online services appear to be the most price-sensitive. Users of full service firms are less likely to switch providers than are users of discount or low-cost online financial services firms. Verma et al. offered several key managerial insights about competing online, including:

1. *Switching inertia* – customers need to be offered substantial value to persuade them to switch providers.
2. *Usage patterns* – analysis of frequency and type of financial services permits development of a service package to appeal to a specific customer segment.
3. *Gender and age* – women and older persons are more interested in service quality and access to a full range of support services than males or younger adults.
4. *Online-only features* – real-time information, real-time account status and online decision tools when perceived to add value can reduce customer price sensitivity.

M-PAYMENTS

Case Aims: To illustrate how technological advances are changing the nature of financial transaction activities.

Mobile or 'm-payments' is a term to cover any form of transaction using a mobile device involving the transfer of money between consumers and financial intermediaries or between corporate customers and these organisations. These transactions can be remote or proximity-based. Remote transactions can be initiated through SMS and WAP (Wireless Application Protocol). Proximity-based transactions require a near-field communication (NFC) chip in the device.

M-payments are changing the financial transaction supply chain (Lowry et al., 2006). Existing players such as banks have been joined by phone network operators, mobile device manufacturers and creators of new software apps (Pope et al., 2011). Although industry experts have long been forecasting the emergence of m-payments, it was the advent of smartphones and the ability of developers to create payment apps which has accelerated the use of mobile devices. Early apps were created by third-party software developers seeking to enter the financial transaction industry. For example, Mint, a supplier of personal budgeting software, created an app to help people keep track of personal spending on a monthly basis. Such products were soon followed by the major banks offering their customers a free app for managing personal banking activities. Banks, such as Bank of America and JP Morgan Chase in the US and Barclays and HSBC in the UK, have released smartphone apps that allow customers to check their bank statements, review credit card payments and execute online money transfers. The number of active consumer mobile banking users worldwide is forecast to reach 894 million in 2015, a rise from 55 million in 2012 (Darsow and Listwan, 2012).

One development which may accelerate the use of m-payments is the emergence of transaction automation. This occurred in 2010, when the start-up firm, Square, developed the technology to use a smartphone to manage credit card transactions. The system works by combining a small, square-shaped card reader with a free app for smartphones. The user swipes the credit card on the smartphone. This initiates the credit card approval and purchase process. In 2011, Square announced the release of two new apps, Card Case and Register. Card Case allows customers to view merchants who accept the card, make mobile payments, receive virtual receipts and

discover other Square-enabled merchants. Square Register is point of sale software aimed at replacing traditional credit card terminals and cash registers.

In developed nations, m-payments systems merely represent the next step in the automation and enhancement of financial transactions. In developing economies, such as that in India, m-payments will permit millions of people in remote areas to start exploiting the Internet to engage in safe and secure financial transactions for the first time. It also allows poorer people to create a credit history to allow them future use of banking services.

B2B organisations are also interested in m-payments to exploit the technology to acquire brief, immediate information and to undertake fast simple transactions, such as moving funds from one account to another on a 24/7 basis. M-payments systems permit executives to receive alerts concerning activities within corporate accounts at any time and in any location. Organisations require this type of service in order to ensure only approved transactions take place and to monitor critical variables such as cash flows and adequate account balances (Menn, 2011). Currently executives still tend to use their laptops to engage in m-payment activities, but over time it can be expected that mobile devices such as smartphones and tablets will become the more dominant Internet communications platforms (Keizer, 2011).

The ability to authorise the movement of cash from remote locations has caused organisations to be concerned about the security of accessing accounts via mobile channel systems. These concerns include issues such as the loss of mobile devices, interception of data while being transmitted and protecting the operation from attacks by hackers. Consequently, financial institutions have added to their mobile service platforms the same proven security and user validation systems already in place in their other online systems (Darsow and Listwan, 2012).

Self-service

As the Internet permits the linking of data inputs with existing data records to support identity recognition, this means self-service approaches have become of increasing interest. Retailers have begun to engage in the introduction of SST in which the customer uses a scanner to enter their purchases and pays the bill at an automated checkout.

The concept is of appeal because of (i) permitting standardisation of interaction with consumers (ii) increasing productivity and efficiency and (iii) allowing consumers to become productive resources involved in the service delivery (Curran et al., 2003).

Self-scanning checkouts in grocery stores were first introduced over two decades ago but were initially not well received. This resistance may have been due to consumers' lack of trust and confidence in themselves as operators and the poor performance of the new technology. In recent years, self-scanning technology has become more effective and sophisticated to the point where consumers are more accepting of the concept. Elliott et al. (2013) opined factors influencing usage of the technology are consumers' readiness and personal skills, plus the capabilities of available SSTs. Reinders et al. (2008) posited that forcing consumers to use self-service technology can have an adverse impact on a service provider's image, possibly leading to (i) an increase in negative word-of-mouth about the service provider and (ii) a loss of customers to competition. Weijters et al. (2007) and Beatson et al. (2007) found reduced contact with staff as a consequence of from SST led to lower customer satisfaction and customer loyalty. In response, some major retailers in the US and the UK have removed self-service checkouts in order to retain one-on-one interaction with customers.

Online gambling

One of the most successful exploitations of the Internet has been the gambling industry. Online gambling has become increasingly popular for betting on sports and playing casino games. Available games include bingo, video poker, video slot machines, backgammon and roulette. Measuring the actual size of the global online gambling industry is extremely difficult, but there are clearly billions of dollars involved and the industry has continued to sustain revenue growth even during the recent global economic downturn.

Most online casino-style games such as slot machines, blackjack, roulette and poker require complex graphics, sound and interactivity. Currently, these are not really suitable for mobile devices because mobile phone graphics and technology cannot compete with web browsers on a PC or tablet. As a consequence, mobile phone gambling is best suited for racing and event betting, where all that is required is real-time access to data about the event, where a bet is to be placed and the ability to make a bet in real time. Such facilities are easily provided by the web-enabled third generation (3G) mobile phones. This

situation is changing because more consumers own fourth generation (4G) phones, where the enhanced graphics and interactivity permit people to play games such as blackjack, poker and slot machines online (Griffiths, 2003).

There are a number of factors that differentiate online gamblers from their terrestrial counterparts (Cotte and Latour, 2009). Online players face fewer restrictions, such as the prohibitions on people below a certain age being able to place bets. Participation in online gambling often leads to betting becoming a standard part of everyday living. The risk with this situation is that the activity can occur without the knowledge of other members of a family, such as parents or spouses. The advent of online gambling permits children and teenagers to engage in gambling at a much younger age, which increases the risk of them becoming addicted to the activity (Shaffer and Hall, 1996).

Although online gambling is a growth industry, suppliers have faced a number of obstacles including governmental regulations, credit card company controls regarding use of cards for gambling purposes and the social stigma associated with gambling in certain countries. The concern of many governments has been that as online gambling providers can be located anywhere in the world, this situation has a potentially negative impact on collecting tax revenues. The response of some governments in such countries as the US, where terrestrial gambling generates high state and federal tax revenues, has been to enact laws restricting Internet gambling sites including those located elsewhere in the world. Many of the major credit card companies have incurred financial losses as people who have lost money through online gambling have been unable to pay off their credit card bills. As a consequence credit card companies such as Citibank, Wells Fargo, Fleet, MBNA, Bank of America and American Express have banned the use of credit card payments for debts incurred from Internet gambling. This is despite the decision significantly reducing the revenue flow (Depaula, 2002, p. 23). However, other credit card lenders have ignored these risks or feel confident enough to continue to offer the use of their cards on Internet gambling sites.

A major concern of credit card companies and site users is the integrity of gambling websites. Although some countries such as Australia and the UK have created regulatory checking systems for online gambling firms, other countries have not. As a consequence, numerous unregulated online gambling operations exist. The risk facing the gambler is that the website owners can arbitrarily shut down their site without paying out winnings (Beauprez, 2002).

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13
Public Sector Online

Changing philosophy

By the mid-1980s, inflation and rising unemployment were problems confronting virtually every Western democracy. With welfare services costs rising faster than tax revenues, reform of the public sector was implemented under the banner of 'New Public Management' (NPM). (Graham, 1994). As problems over implementing genuinely customer-orientated strategies began to emerge, some academics questioned the potential of NPM to achieve fundamental reform. Hood and Jackson (1992) concluded that NPM was a 'disaster waiting to happen', and Farnham and Horton (2007) perceived NPM as a 'failed paradigm'.

By the 1980s, many Central Banks were aware that to reduce inflation, public sector spending needed to be reduced. Unfortunately, despite these warnings, most industrialised countries continued to run persistent deficits leading to rising debt-to-GDP ratios (Weiner, 1995). As part of their anti-inflation and economic stability policies, Central Bankers kept interest rates very low. In the 1990s and early 21st century, there was an upswing in consumer spending based upon private citizens perceiving rapid increases in house prices and borrowing against this asset to (a) speculate in the property market and/or (b) sustain their spending on enjoying a better lifestyle (Connelly, 2008; Whalen, 2008).

In the US, banks entered the sub-prime mortgage market offering low interest loans and reducing the level of assets that borrowers needed to secure a loan (Kaufman and Wallinson, 2001). When it became apparent that many of these sub-prime mortgages were not secure, the US banking industry went into crisis. To avert a banking meltdown, the US Government approved a huge bail-out fund and implemented Quantitative Easing to sustain liquidity in the financial markets. In the

UK, and to a lesser extent in the US, politicians were forced to accept the unpalatable truth of needing to significantly reduce public sector spending (Chaston, 2011). Governments in mainland Europe were initially confident that their countries would not be affected by the global banking crisis. By 2010, however, it became evident that countries such as Ireland, Greece, Spain and Portugal had been growing their economies through increased public sector spending funded in large part by increased borrowing on the short-term money markets (Chaston, 2012).

To rebuild their shattered economies many governments introduced austerity programmes involving a reduction or abolition of public sector services accompanied by a reduction in the number of people employed in the public sector. Organisational cutbacks have reduced the motivation of those remaining in employment to engage in innovation that could enhance the marketing of services through actions such as improving quality or developing new ways of interacting with their clients.

Computerisation

The diverse nature of the modern welfare state means that public sector organisations (PSOs) are deeply engaged in the generation, storage, access, analysis and exchange of information. Hence the IT industry perceived that governments represented a prime target to be persuaded to computerise their operations. The focus of most projects, however, was upon reducing operating costs. Minimal attention has been allocated to exploiting computers to assist in understanding and enhancing client satisfaction with services being delivered.

The marketing strategy adopted by the major computer firms in the public sector was to promise that large-scale, integrated data processing systems could deliver massive savings in operating costs. However, for such projects to succeed there were the requirements that (a) public sector managers could manage highly complex, leading edge technology programmes and (b) the outcomes promised by the computer firms were actually technologically feasible. Such requirements have often not been met (Berrios, 2006).

A CATALOGUE OF ERRORS

Case Aims: To illustrate the problems which occur in the implementation of public sector computerisation projects.

By the late 1990s, over a 20-year period, UK taxpayers had funded £4.6 billion worth of failed public sector computer projects. London

Ambulance Service put in a system that resulted in serious delays, cost millions of pounds and at one point people who dialled 999 for an ambulance found themselves connected to an answerphone message. Wessex Regional Health Authority lost somewhere between £20 and £63 million on a non-functioning Regional Information System. The Department of Health spent in the region of £100 million on a national hospital computerisation plan (Collins, 1997).

The Department of Social Security's (DSS) Operational Strategy proposed the logical idea of computerising the UK's welfare payments system. The proposed concept was to exploit the data-processing power of the modern computer to deal with each claimant on a 'whole person' basis, thereby permitting social security claimants to receive a combined benefit payment anywhere in the country. The DSS told the Treasury that the new equipment would pay for itself within 16 years. By the late 1980s, Operational Strategy comprised ten separate computer projects, with 'Lop' dealing with income support and incapacity benefits and 'Lomp' handling family credit. By the summer of 1989, DSS staff were complaining about the system's slow response times and technical errors. One of the main computer centres logged 20,935 faults in a year and the time taken to process some benefit claims actually lengthened. Furthermore, although parliament approved a project with an estimated cost of £713 million, this figure had risen to £2.6 billion by 1994.

Despite the errors made in the 1990s, few lessons seem to have been learned, as is exemplified recently by Haringey Council's Tech Refresh scheme in London, which was estimated to cost £9 million but actually cost £24.6 million. The Audit Commission investigation found that suppliers and consultants were being paid millions of pounds without adequate controls or records.

Technological change

Similar to the private sector, PSO work processes and systems were dramatically altered following the arrival of PCs and associated software. Staff began to use the Internet search function to acquire external data and to communicate via e-mail in place of the telephone or face-to-face communications. Although the activities of private sector organisations in sectors such as retailing and travel demonstrated

the benefits of utilising the Internet to enhance interaction with customers or other supply chain members, the public sector has been slow to exploit the benefits of moving service provision online. This reticence reflects concerns over data security, resistance to change among older, more traditional senior managers and whether connecting with private citizens may result in higher demand for PSOs to start providing more rapid and efficient services. As a consequence, many PSOs' greater utilisation of the Internet has been to upgrade communications and data exchange based upon creating closed online Intranet systems (Welch and Pandey, 2007).

As PSOs have moved online, concerns have arisen about the lack of social inclusion in terms of equality of access. Identified barriers to e-inclusion include individuals lacking (i) motivation and interest, (ii) IT skills and training, (iii) financial resources to acquire a computer and (iv) awareness of e-services and the possibilities of Internet usage (Van Aerschot and Rodousakis, 2008).

TECHNOLOGY PARTNERSHIPS

Case Aims: To illustrate how public–private sector partnerships can enhance the capability to deliver services.

Many PSOs lack understanding of actual market need and the internal skills to develop cloud-based solutions to enhance the provision of services. The more enlightened PSOs are finding that collaboration through the formation of a public–private sector partnership is an extremely effective solution.

Micheli et al. (2012) provided an example of the benefits of public–private sector partnership involving the UK's National Health Service (NHS), Meteorological Office and the Finish company, Medixine. The project emerged from recognition that by using weather forecasts the NHS could be given early warning of bad weather. This is important because bad weather leads to increased demand for healthcare services, especially among the elderly. The role of Medixine was the provision of a proprietary technology platform that makes automated calls delivering an interactive prerecorded message direct to patients, hospitals or local general practitioner offices warning of impending weather problems. Within the first two years after launch, over 40,000 patients were connected to the service, and admissions in participant hospitals fell by approximately 30 per cent.

Moving online

The initial online strategy of many PSOs was that of creating websites to provide information about the nature of available services. As advances in Internet technology provided faster connection speeds and the potential for interaction with site visitors, this has allowed public sector entities to provide more interactive and high quality multimedia content to users. Interaction has also been extended to include consumers contacting PSOs by e-mail, returning downloaded forms and submitting materials in a digital form. As a consequence, the public sector is able to make available additional services and begin to build closer relationships with both other organisations and the general public.

Developments in cloud computing mean governments are now more able to rapidly configure and make available to consumers a wide range of scalable services, such as infrastructure, business process, software, platforms and apps. The role of the Web 2.0 technologies in these e-government initiatives can be categorised into the following three distinct levels of use (Ching-Chieh et al., 2010):

1. *Communication-focused* – involves governments disseminating information to citizens using a broad range of platforms such as websites, blogs, RSS, wikis, enterprise social networks and podcasts.
2. *Interaction-focused* – governments interact with employees, other agencies and citizens to obtain their views on services, service design, new ideas, policies and plans.
3. *Services-focused* – allows intermediaries to combine their content and application provision with public sector data.

The speed with which PSOs have moved online varies between countries. Factors influencing the speed of adoption include level of economic development, the modernity of the country's telecoms infrastructure and the population's access to computers. Another factor is governments' commitment to freedom of speech and the existence of democratic institutions (Anon., 2009).

Government agencies face a number of problems when seeking to exploit big data. These include the fact that data is scattered across numerous departments, legacy systems prevent data interchange and there are few standardised systems available to support data analysis (Gong-hoon et al., 2014). Added complications are created by the need to fulfil legality, security and compliance issues. Nevertheless, big data is already enhancing productivity in the public sector. For example, the

US Revenue Service has been able to significantly upgrade their ability to detect, prevent and resolve tax evasion through the application of business analytics.

Where there is a requirement of various PSOs to share data to create an online service numerous obstacles emerge, such as hardware or software incompatibilities, willingness to share power with other organisations and the degree to which a non-collaborative orientation influences relationships. Intra- and inter-organisational network building is central to the creation of effective e-government services, because successful online processes usually require PSOs to be willing to work together. Additionally, there are the complexities of utilising communication channels such as mobile devices, digital television, automated call centres and a variety of communication formats ranging from text or simple graphics through to audio/video data streaming (Pandey and Garnett, 2006).

Streib and Willoughby (2005) analysed local government projects to move service provision online. On the basis of their study they concluded that successful customer orientated outcomes were greatly influenced by:

1. *Stable internal environment* – so staff are able to focus on the design and implementation of an e-initiative.
2. *Adequate staff resources* – demanding senior management allocate a sufficient number of employees to the project.
3. *Knowledgeable leadership* – required to understand the technical and human resource management aspects of creating an online system.
4. *Technological capability* – for procuring and bringing into operation the most cost-effective hardware and software.
5. *Effective communications systems* – needed to ensure project staff are able to acquire and exchange information.
6. *Managing online security* – necessary because online systems involve the acquisition, storage and utilisation of confidential information.
7. *Achieving external satisfaction* – ensuring the general public are supportive of the new service provision.

M-SERVICES

Case Aims: To illustrate how mobile technology is influencing the delivery of online services in the public sector.

M-government is an extension to existing e-government services by the use of mobile devices to link private citizens to PSOs.

Although somewhat slower on the uptake than the private sector, PSOs now recognise that consumers have embraced mobility utilising laptops, mobile phones, tablet PCs and BlackBerries to remain in touch while on the move (Lee et al., 2006).

In the case of m-technologies, there are a number of added benefits (Trimi and Hong, 2008):

1. Opportunities to offer more interactive services.
2. Citizens can access services on an anywhere–anytime basis.
3. Swift transmission of time-sensitive information.
4. Reduced Internet connectivity problems.
5. Wireless networks are more cost-effective in certain countries.
6. M-government applications can reduce corruption and low productivity.
7. PSO staff can access or exchange date when away in the field.

The majority of governments are proceeding slowly with an expansion of m-services due to concerns over privacy and risks associated with the theft of personal data. Concerns are exacerbated in the case of mobile devices, which are small and can be easily misplaced or stolen. Also, confidential data can be easily acquired by people hacking into wireless signals while mobile devices are in use.

Customer satisfaction

Supporters of the NPM emphasise that focusing upon a stronger customer orientation will lead to improved levels of service delivery by PSOs (Scott and Robbins, 2010). In the context of online services, stronger customer orientation requires PSOs to go beyond seeking greater efficiency and economic gains to encompass the social objectives of trust, social inclusion, community regeneration and sustainability as the prime goals of e-government initiatives (Grimsley and Meehan, 2007). A customer orientation will result in greater customer satisfaction by providing improved access and transparency in relation to service provision (Lau, 2006). The ultimate aim is to create an information society by establishing an

infrastructure capable of guaranteeing the general public secure and reliable transactions when interacting with PSOs via the Internet (Muhlberger, 2005).

Customer relationship management (CRM) in the private sector utilises data on specific customer groups as the basis for providing services which accurately meet the needs of different target groups. However, when CRM is applied in the public sector, the usual requirement is that services are offered equally and fairly to all consumers. Hence PSOs are often required to focus on meeting the needs of an entire population, but in a world of declining public sector resources, equality is increasingly impossible to achieve. A potential benefit of e-government is the ability to provide services that are too inefficient or expensive when offered offline.

Co-production

The private sector has long recognised that social networks can persuade customers to provide content to online platforms, such as contributing to an online forum. In contrast, public service provision tends to focus on the relationship between citizens and government, with PSOs orientated toward how online activities can enhance the effectiveness and efficiency of the service provision. Meijer's (2011) perspective is that PSOs are exhibiting a supplier-centric perspective and there is a need for a more customer-centric perspective. This would mean PSOs can exploit the opportunities to persuade service users to contribute content via a social networking facility by engaging in co-production. Two benefits offered are:

1. *Substitution value* – citizens can perform tasks thereby saving PSO resources.
2. *Supplementary value* – citizens contributing to information which is made available to others by the PSO.

According to Pestoff (2006), co-production enhances PSO productivity because the activity leads to cost reductions, higher service quality, expanded opportunities for participation and greater satisfaction among the general public. The other benefit of co-production is that the activity can lead to a closer relationship between government and citizens (Bovaird, 2007).

E-PROCUREMENT

Case Aims: To review the issues associated with the utilisation of online procurement by PSOs.

An important aspect of NPM has been improving the purchasing capabilities of PSOs. The advent of the Internet has assisted in this area by creating online systems which offer the benefits of (a) reducing procurement costs and (b) permitting PSOs to expand their footprint when seeking supply sources. The introduction of 'e-tendering' can enhance the number of suppliers bidding for a contract and permit cost savings through the creation of online platforms to support e-auction activities.

In the UK, where the public sector spends over £150 billion a year in goods and services, central and local government departments have significantly expanded utilisation of e-procurement. The Department of Work and Pensions has been able to achieve significant cost savings by simply moving some routine operations and functions online. Similar benefits were identified in the NHS in terms of achieving price reduction for goods purchased from the private sector. An analysis by the Office for Government Commerce (2005) estimated almost 30 per cent of the central government's five million purchase orders were already processed online, generating about £57.8 million in savings.

Although e-procurement offers significant cost-saving opportunities for PSOs, there is the concern that moving purchasing online may increase the number of suppliers from outside the immediate area beginning to offer goods. This can be a detrimental outcome for local suppliers for whom PSOs represent a considerable portion of their total revenue.

E-outsourcing

Lower cost international telecoms and the Internet has permitted many large private sector organisations to outsource some or all of their back-office operations to companies located in lower-cost countries such as India. Although the public sector has moved into outsourcing, the speed of such change has been restricted by both objections from the

public sector unions and concerns over data confidentiality (Pollitt and Bouckaert, 2004).

With the advent of the Internet and cloud computing, the issue arises over whether any or all of public sector IT activities can be outsourced to the private sector. Modularisation assists the process of outsourcing because PSOs can be selective over which roles might be undertaken by private sector providers. Examples of modularisation include managing online payments, receiving an application for a service or checking an application for adequacy (Baldwin, 2007).

UK OUTSOURCING EXAMPLES

Case Aims: To illustrate how certain aspects of public sector service provision activities can be outsourced.

The UK Identity and Passport Service (IPS) is an agency subordinated to the British Home Office. Beginning in the 1990s, activities related to the application for and issuance of passports were transferred to other agencies. Initially, these agencies did not have specialised IT systems for tasks such as performing checks for completeness and acceptance of applications. Due to problems over handling people who were telephoning these agencies seeking information, this activity was outsourced to a private sector call centre. This company also had the ability to assist citizens in completing their passport applications by providing information about the status of a submitted application; and making interview appointments for passport applicants needing to visit a passport office.

The services were delivered by call centre staff using a CRM solution which utilised telephone, web and e-mail interface facilities. Call centre employees were also provided with read-only access to the internal Passport Application Support System (PASS). This is an electronic workflow system used by the passport agency. In 2008, the call centre answered more than 90 per cent of over four million calls within 20 seconds, and 98 per cent of callers who wished to arrange a one-on-one terrestrial appointment with a passport office were satisfied with the call centre service. This compares to less than 50 per cent satisfaction in 1999, before this aspect of the passport application was outsourced (Schuppan, 2009).

Healthcare

In terms of welfare state affordability, the greatest problem lies with the provision of healthcare. Governments now recognise that even where change may generate adverse response, ways must be found to make healthcare provision more cost-effective and patient orientated (Shoemaker, 2009). The Internet and related communications technologies are seen as the most likely ways such aims might be met.

The Internet can provide the following benefits (Sternberg, 2002):

1. Establishing close, supportive relationships with patients.
2. Becoming the preferred source of health information and service provision.
3. Increasing patient convenience.
4. Creating more effective ways to share knowledge and information.
5. Creating new ways to deliver care.
6. Reducing operating expenses by applying IT-based automation.

A major component of the healthcare provision involves the acquisition, storage and analysis of data. At the level of the individual patient, this activity occurs when a medical professional engages in a review of symptoms, examines past medical history or assesses the prognosis of ongoing treatment. Exploitation of available data also occurs at the macro level, such as a hospital utilising patient records to evaluate alternative treatment regimes, or at a national or international level when determining the effectiveness of an illness prevention programme such as vaccinating children. The Internet, by providing new forms of communication and information, can offer major cost savings in relation to the management of patients because healthcare professionals can access dispersed databases and exchange data on medical treatments undertaken at different locations (Binshan and Umon, 2002).

Healthcare providers and governments have been very enamoured of the claims of the huge savings that could be made by creating national electronic records systems. Unfortunately, to-date, most of the attempts to build such systems have led to massive cost overruns and created systems not fit for purpose. These outcomes have led to a shift towards the development of electronic personal health record (PHR) systems. This alternative approach is designed to permit individuals to access, manage and share their health information in a confidential environment (Steele et al., 2012).

The number of health care providers who consider PHRs as a main source of information in the delivery of care remains relatively low (Fuji et al., 2008). This possibly reflects unfortunate experiences when using pre-Internet systems where there were problems over data reliability and adverse cost–benefit outcomes. The latter obstacle can be expected to be removed as individuals and organisations move towards storing information in the cloud. Another catalyst for change is the move towards smartcard-based PHRs and ability to access records using mobile devices.

HEALTHCARE ANALYTICS

Case Aims: To illustrate key issues in using big data in healthcare management.

Although large health-related datasets now exist, analytic capabilities are limited because of a lack of complete, accessible and useable data. Data aggregation presents problems because of data reliability, heterogeneous data and lack of technical standards. Other issues include the lack of support in commercially available clinical information systems for integrating the analytics into clinical workflow and an analytic capability to address varying needs for outputs from diverse stakeholders. This means that to be effective, healthcare analytic capability will need to include data aggregation from multiple heterogeneous sources, cleaning, transformation, validation, data warehousing, model generation and user access to output.

Gosh and Scott (2011) examined the US Veterans Health Administration (VHA) utilisation of analytics, which has improved care processes and patient outcomes whilst reducing costs. Both automated tools and manual processes are essential for robust data collection and cleaning processes. The VHA programme achieved data standardisation by facilitating knowledge sharing. The key lessons learned were:

1. *Emphasise data interoperability and system quality* – promote use of automated tools and manual resolution to (a) ensure the quality of the input, (b) build trust in system outputs and (c) ensure data standardisation.
2. *Support effective decision-making and processes* – allocate resources for an infrastructure to ensure outputs to support users' tasks.

This involves statistical risk models, reports and dashboard views for users to access information that supports effective decision-making.
3. *Measure impacts* – support measurement that evaluates system success, resource allocation and accountability. Measure improvements in patient care and use data to sustain ongoing development of better healthcare solutions.

ONLINE HEALTH EDUCATION

Case Aims: To illustrate how the Internet can assist in communicating health education campaigns.

An increasingly important aspect of reducing healthcare costs is the utilisation of preventive medicine, of which healthcare education is seen as one of the powerful weapons to make people more aware of reducing the risk of illness through (a) adopting healthier lifestyles and (b) recognising specific symptoms and seeking treatment at the earliest possible stage when many illnesses are still treatable. The Internet and other online provision, such as social networks, are providing effective ways of reducing education provision costs whilst concurrently achieving high message awareness.

Of great concern to the medical community is the exponential rise in adult and child obesity. In Utah, almost a quarter of children are obese. In 2007, the Salt Lake City-based Intermountain Healthcare organisation created a childhood fitness campaign. Targeted at children aged 11 to 15, the campaign used a multi-channel peer-to-peer approach, including online theatre and special websites designed to appeal to children (for example, www.intermountainlive.org; www.intermountainvive.org). Advertising campaigns were run on both terrestrial television channels and YouTube (Behunin and Vitelli, 2010).

Morarity (2009) recommended that in order to maximise the effectiveness of using social media, answers are required to the following questions:

1. Who will have access to social media?
2. How often will information be posted?
3. What time commitment is expected/available from staff to post materials?

4. What are the topics which will receive focus?
5. How will staff be trained to participate in social media?
6. How should contact guidelines apply to social media?
7. What information is confidential and must not be released to the social media?
8. How will transparency of interactions in the social media be achieved?
9. How will negative comments be managed?
10. How will the organisation define success in evaluating campaigns?

Patient satisfaction

A recognised influence on patient satisfaction is the waiting time endured prior to meeting with their doctor or the commencement of treatment. Significant cost savings can accrue from patients using the Internet for tasks such as setting appointments, requesting prescriptions or consulting physicians about minor health problems. As well as offering patients superior service convenience, doctors have more time to treat those suffering from more serious medical conditions (Erdem et al., 2004).

In terms of the next significant change in online doctor–patient interaction, the most likely event will be tele-visits by patients. Many people, through involvement in video conferencing at work and at home communicating via Skype, are now accepting of using the Internet to interact with others. Once more doctors and nurses become willing to move online using web-cam based computers at work, online patient consultations can be expected to replace a certain proportion of the traditional visits of patients to surgeries or hospitals (Catallo, 2008).

'Telemedicine' is the use of communication and information technologies in the context of healthcare provision. Barlow et al., (2006, p. 397) defined tele-care as 'a set of services bringing care directly to the users'. The activity includes the provision of health and service information, such as health education advice, safety and security monitoring of elderly persons in their own home and monitoring of vital parameters of patients recovering from surgery (Nicolini, 2010).

Traditionally, telemedicine has relied upon machine-to-human communication in the monitoring of medical conditions. The Internet has changed this situation because the technology permits a much greater

use of automated machine-to-machine (M2M) data interaction. M2M can improve compliance with prescribed treatments, accelerate reaction times to medical emergencies and deliver better treatment outcomes. The integration of online M2M systems into the healthcare sector means patients can be monitored remotely at home. This approach provides a reduction in the amount of time patients need to spend in hospital following surgery. Remote monitoring, where delivered in real time, can also significantly increase the speed of reaction to any home patient's emerging problems (Bodhani, 2012).

M2M systems provide remote monitoring of patient symptoms through the use of intelligent devices which are either worn or implanted into the body. These devices can provide data for the more effective treatment of high blood pressure, diabetes, obesity and cardiac disease. The stage of development for this new technology does mean that some of these new systems are still very expensive. Hence one possibility that might accelerate adoption rates is to permit patients to select and pay for their own personal monitoring devices, which are linked to apps that can run on a smartphone, tablet computer or PC.

Telemedicine is considered in the context of a number of sub-divisions (Picot and Cradduck, 2000):

1. *Telehealth* – communications and information technology to deliver healthcare services and information.
2. *Telemedical education* – medical image repositories to present diagnosis or treatment distributed via the Internet to remote locations.
3. *Telemedicine information* – medical information, including visual imagery, is stored, analysed, accessed and utilised in diagnosis, treatment and medical research.
4. *Telemedicine networks* – systems whereby data used in patient care can be stored and accessed for activities such as being reviewed by specialists to whom patients have been referred.

SERVICES FOR THE ELDERLY

Case Aims: To illustrate how telemedicine can be utilised to enhance the provision of healthcare services for older persons.

Population ageing is placing increasing demands on funding care for elderly people. Hence, this area of healthcare has received the greatest attention in the pioneering of new approaches in

exploitation of the Internet to deliver telemedicine. Increasingly referred to as 'iCare', the following are opportunities to use telemedicine to care for the elderly (Chang et al., 2009):

1. *Telemedicine e-services* – remote medical assistance such as monitoring people's physical state and responding where the system indicates an emerging medical problem.
2. *Mental e-services* – assisting lonely aging persons through the use of online social connections.
3. *Online therapy* – entertainment delivered to elderly individuals or groups to seek to stimulate involvement in some form of physical exercise.
4. *Information provision* – providing access to generic or personally secure information about managing health at home.

Online aging service technologies can be divided into care-oriented and environment-oriented technologies. The care-oriented technologies are aimed at optimising the quality of care and life for elderly people. Environment-oriented technologies have the aim of assisting the older people to live safely and actively. One example of a care-orientated system is Autominder, which has been developed by NASA. Autominder's function is to provide adaptive personalised reminders for the activities of daily life and it maintains an accurate model of a client's daily plans. The UbiMon system is a project which seeks to improve healthcare delivery by combining wearable and implantable sensors to monitor a patient's physiological state and, by detecting change, identify the emergence of life-threatening symptoms.

Environment-oriented technology focuses upon creating monitored environments. One example is the MIT's Aware Home system, which is a research project to develop a system whereby occupants of a home can be remotely monitored and action implemented when concerns begin to become apparent about the physiological or physical state of an elderly person (Kidd et al., 1999). The Gloucester Smart House was developed using several integrated and stand-alone smart house systems to assist people with dementia. Systems built into the home are designed to detect when the user is awake, to provide messaging through voice units distributed throughout the house and automatically turn off cooking devices when smoke or gas is detected.

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14
Online Governance

Governance

The early forms of corporate entities which emerged during the early 17th century in Europe were created to serve the common good, such as the building of hospitals and creation of orphanages. The concept of a commercial corporation in the UK was defined by an 1844 Act of Parliament. This permitted corporations to define their own purpose and activities. A second Act in 1854 gave shareholders limited liability that protected their personal assets from the consequences of the financial failure of a corporation. This legislation stimulated the emergence of business corporations in both England and Holland. In many of the existing trading companies, partners combined their personal assets and exchanged them for company shares in return for receiving relief from personal liability. This form of organisation gave corporations the added benefit of unlimited life and easy transferability of ownership (Grant, 2003).

At the beginning of the 20th century, company expansion via mergers became popular, often financed by public stock offerings. This triggered more professional managers being employed to run companies, while the owners as shareholders were no longer involved in day-to-day activities. As a company continues to trade, capital comes less from investors and more from the profits generated from sales or through borrowing from financial institutions. The corporation is the legal owner of capital assets, with the management acting as trustees of the company assets (Cheffins, 2001).

The separation of management and owners resulted in a series of legislative changes and legal actions to protect shareholder rights and to instil the concept of appropriate behaviour or 'corporate governance'

into individuals hired to manage companies (Wootton and Roszkowski, 1999). The perspective emerged that corporate governance is concerned with seeking to achieve alignment of management and shareholder interests. Financial events such as the 1929 stock market crash and the subsequent Great Depression acted as a catalyst for legislative change aimed at ensuring managers did not act in a way that was detrimental to both stakeholders and the general public.

The focus of new legislation is often determined by well publicised examples of what has been identified as inappropriate behaviour. Since World War II, areas of concern over the behaviour within organisations have included issues such as the scale of pay and bonuses for senior managers, abuse of employee pension funds and involvement in illegal actions, such as paying bribes. Even though proponents of new approaches for improving governance usually claim their proposals for legislative action will provide an effective solution, it nevertheless does seem that the same management misbehaviour problems do appear to re-occur on a regular basis.

Whether any legislation will result in a permanent improvement in corporate governance remains somewhat questionable. Corporations usually respond by announcing they have been forced to take a serious look at their governance structure. Unfortunately, as demonstrated by the recent crisis in the world's banking industry, history in relation to the emergence of declining integrity among senior executives does have a habit of repeating itself on a regular basis (Petrick, 2011). Sometime in the future, managers will again find new ways of circumventing legislation or accepted governance guidelines in order to either pay themselves excessive salaries or cover up illegal transactions. This is because there are always some individuals prepared to place self-interest ahead of adhering to an expected standard of behaviour as defined by an organisation's governance rules (Leung and Cooper, 2003). In view of this conclusion, the highly successful American investor, Warren Buffett, suggested 'To clean up their act, CEOs don't need independent directors, oversight committees or auditors absolutely free of conflicts of interest, but simply need to do what's right' (Buffett, 2002, p. A19).

Governance and the marketer

The advent of the Internet means that ensuring an organisation is not breaching any laws has created further responsibilities for the marketer. It is critical that marketers understand legislation in relation to issues such as transparency, fair business, advertising claims,

online disclosures, order confirmation, payment dispute resolution and redress. It is also necessary to ensure all online disclosures that provide additional information avoid the potential of deceiving the customer (Hoy and Lwin, 2008).

In terms of ensuring customers are treated fairly and remain loyal, it is necessary for employees to go beyond merely fulfilling prevailing legislation and exhibit an adequate level of 'corporate citizenship'. Maignan et al. (1999, p. 457) proposed 'corporate citizenship' is the extent to which businesses meet the economic, legal, ethical and discretionary responsibilities placed on them by their various stakeholders. Economic citizenship includes the duty to be productive, to maintain corporate economic wealth and to meet customer needs. Legal citizenship requires pursuing the firm's economic mission within the framework of the law. Ethical citizenship requires that companies abide by society's moral rules. Discretionary citizenship involves meeting society's desire to see companies actively involved in societal betterment beyond economic, legal and ethical activities (Rego et al., 2011).

In terms of exhibiting an adequate level of corporate citizenship, the marketer should keep in mind the potential legal costs that can occur through acts which are detrimental to the customer. The perspective of the courts in relation to such cases can be about proving the supplier is accountable for their actions. In some courts, however, the ruling may also be based upon the alternative perspective of the organisation's commitment. Commitment is an issue which goes beyond accountability and represents an approach that examines moral responsibility in relation to an employee or an organisation's intentions, motives, understanding, reasoning and deliberation, prior to and during the decision-making or implementing action. Lack of moral responsibility involves persons consciously committing an act which they know or believe would be detrimental to a third party.

Antecedent responsibility refers to those marketing exchange behaviours prescribed by legislation, standards or norms, or pacts or contracts regarding production, products, packaging, distribution, advertising or contractual accountability in terms of duties and obligations. When violations occur, marketers should expect to be held accountable in the form of consequent responsibility. Where the marketing responsibility goes beyond antecedent or consequent responsibility and is prescribed by company or professional codes of conduct, this is known as ethical or moral responsibility (Mascarenhas, 1995). Available evidence would indicate that customer loyalty is much higher in those cases where the supplier is perceived as exhibiting ethical or moral responsibility.

Internet legislation

The evolution of electronic communications such as the telephone, radio and television were accompanied by governments retaining control over the granting of operating licences to organisations. In addition to deciding whether the producer organisation would remain within the public sector or alternatively licences being granted to private sector operators, governments have introduced legislation to protect their citizens from abuse of the system by suppliers. In some cases, to ensure their citizens were not accessing information which governments wish to avoid entering the public domain, governments have introduced censorship laws concerning what information can be made available by the media. Additional legal protection for individuals and organisations from abuse from communications systems is provided in many countries through laws such as those relating to libel or defamation of character (Balleste, 2011).

The Internet started life as a US government project to develop a technology for communicating computer data utilising existing telecoms infrastructure. As the original system was perceived as a communications tool for researchers, little thought was given to how this system would operate as it evolved into a vast global structure used in commercial transactions or for linking governments to their citizens. Furthermore, the borderless character of the Internet created the situation whereby individual governments face massive problems when attempting to utilise some form of legislation to control the nature and flow of information across the system. As a consequence, by the mid-1990s, with problems such as online fraud and electronic identity theft beginning to emerge, governments have been forced to consider how to create safeguards and oversight mechanisms to protect their citizens and organisations from online abuses.

Canada provides an example of a government seeking to protect their citizens. The key objective of Canada's Electronic Commerce Strategy (Industry Canada, 1998) was to create an environment of trust in which individuals and businesses would have as much confidence in the workings of the digital economy as they have in the country's traditional industrial economy. Some of the measures to be introduced to achieve this objective included:

1. Systems for the authentication and authorisation of parties engaged in online transactions.
2. Protecting the privacy of personal information and the confidentiality of corporate information communicated or stored electronically.

3. Protecting intellectual property rights in electronic goods and services.
4. Establishing a legal framework for contracts to function electronically.
5. Developing dispute resolution mechanisms that function in an e-business environment.
6. Protecting individuals and organisations against abusive practices such as unsolicited bulk e-mail (spam).
7. Ensuring online networks are reliable and secure.

As the Internet has grown into a global network of networks, problems over the borderless nature of the system have led to attempts at global-level regulation. The primary organisation engaged in developing global standards is the United Nations (UN). In terms of the UN's interest, this reflects a desire to ensure users of the technology are protected in relation to the privacy and freedom of expression enshrined in relevant parts of the Universal Declaration of Human Rights.

As demonstrated during the 2011 Arab Spring, individuals will seek to use the Internet to communicate what they perceive are abuses of power by governments, whilst autocratic governments will seek to shut down this channel of communication to the outside world and arrest those who are considered to have breached a country's censorship laws. The responsibility for developing appropriate global regulations has been delegated to the Working Group on Internet Governance (WGIG) (www.intgoyforum.org). This organisation's aim is to define shared principles, norms, rules and decision-making principles over the use of the Internet that are acceptable to all nations (Satola, 2007).

The variations in opinion which exist between nations has made achieving agreement to the Working Group's proposals a slow and difficult task. In terms of achieving the stated aims of WGIG, this can be greatly assisted by governments introducing at a national level agreed rules and legislation in areas such as data protection, personal privacy, electronic signatures, spam and identity theft. However, as online suppliers can rapidly relocate to countries where national legislation does not exist, for many consumers the greatest source of protection is self-protection, through the use of anti-virus software.

In the case of the financial services sector, banks or consortia of banks operate what are known as 'closed networks'. These systems invest heavily in seeking to maintain system security. Much more difficult to police are 'open public networks'. These can be used by anyone. Oversight tends to be minimal, although the network owners can ban

transgressors from ongoing membership. The level of user security on these systems is extremely low.

ILLEGAL ONLINE ACTIVITY

Case Aims: To illustrate some of the illegal activities which are utilised to undertake online fraud.

Botnet is a term applied to one or more networks that have been created by inserting pieces of software into compromised computers. Compromised computers can be anywhere on the Internet.

Hacker refers to an individual who gains unauthorised access to other computers.

Identity theft refers to fraud whereby an individual acquires sufficient information about another individual to undertake illegal activities, such as withdrawing funds from their bank account.

Malware (or 'malicious software') refers to software programmes designed to damage Internet users' computer system. Common examples of malware include viruses and spyware.

Phishing is an aspect of identity theft scam whereby an apparently authentic e-mail is sent to recipients asking them to reveal personal information, such as credit card numbers or online passwords.

Pharming involves attempting to capture personal information by using a computer virus which redirects computer users to visit a fake website that is designed to appear to be the actual website which users normally visit.

Cybercrime

There are a multitude of techniques being used by the cybercriminal to steal individual citizens' identities and gain access to credit card details or users' online passwords. Even larger-scale identity theft can occur when the criminal accesses a major company and downloads the organisation's entire customer records system. Although some data thefts are implemented by amateur hackers interested in seeing whether they can breach organisations' security systems, the vast majority are executed by criminals that are part of domestic or international organised crime (Ramsey and Venkatesan, 2010).

Online fraud is constituted of a number of different activities (Ivan et al., 2012):

1. *Fraud by pre-charging* – where the victim pays but receives nothing.
2. *Auction fraud* – not sending the purchase products.
3. *Investment fraud* – involving investment in a proposition which is never fulfilled.
4. *Business fraud* – where a stolen identity is used to purchase goods or services.

Although the primary target of cybercrime has been directed at accessing people's home computers or an organisation's corporate computer systems, there has now been a shift towards targeting social networks to obtain information on remote servers (Finklea, 2010). One of the aspects of social networkers is a tendency to reveal personal information that can be of use to the criminal. Social networkers are also more likely to trust a spam or a phishing message sent via a social network than when receiving the same message sent directly to their PC (Schaaper, 2008).

Major social network sites and cloud application service providers are aware of the need for their users to be more aware of the risks of cybercrime and are working to educate their customers over ways of improving personal online security. This may involve sending out information about recent attacks, disseminating best practices and how to respond to suspicious-looking links. Some cloud providers supply their clients with anti-malware applications, guidance on malware detection and solutions to removing viruses from computers. Ivan et al. (2012), however, concluded that in most cases the life of the cybercriminal is made easier by the apparent gullibility of people to engage in transactions with people or organisations about whom they have no knowledge.

Although the media have highlighted how organisations are being the target of cybercriminals, less than 10 per cent of operating problems within major computer systems are caused by persons external to the organisation. The remaining causes are all internal, due to unintended and intended actions by employees (Ehrlinger and Eibach, 2011). Furthermore, the frequency and success of attacks could be reduced by implementation of the following policies (Ourston et al., 2004):

1. Design controls and security systems to ensure that access and use of information systems can be traced back to specific users.
2. Restrict access by users to only the system directly related to their assigned roles.
3. Conduct periodic audits.
4. Administer system security audits in an independent manner.
5. Communicate and enforce security policies and procedures.

Online service providers can instigate legal actions against the cybercriminal. In reality, such actions can prove problematic in terms of what laws can be applied, obstacles over jurisdiction and the viability of mounting a cross-border legal challenge. Such activities also assume one can actually identify the physical location of the cybercriminal in order that legal or criminal proceedings can be initiated. The other issue is that some major organisations would prefer to avoid the publicity associated with bringing a legal action. This is because of the potentially detrimental impact of the adverse publicity on customers' attitudes about how secure is the organisation.

Another alternative is for service providers to collaborate with law enforcement personnel in those cases where an identifiable breach in criminal law has occurred. The advantages of this approach is that public prosecutors or consumer protection agencies may benefit from being required to establish a lower burden of proof than may be necessary in a civil action. Additionally, cooperation between agencies will increase the possibility that information on perpetrators will be shared, thereby permitting the construction of a much stronger legal case.

Government attitudes

National-level controls and legislation concerning the activities of organisations within a specific country are known as 'government governance' (Zielonka, 2007). As countries have become aware of the need for higher levels of governance in relation to the Internet, the usual initial response of governments is to seek to persuade organisations to accept voluntary governance approaches and, where this fails or proves to be inadequate, to then introduce hierarchical actions (Christou and Simpson, 2009).

Traditionally telecoms and broadcasting in Europe have been dominated by public sector ownership and hence have been easy to regulate. Privatisation led to the entry of private sector operations, necessitating the creation of new national regulatory authorities. The arrival of the Internet led to debate across Europe on how this new communications channel should be governed and regulated. Two main schools of thought have developed (Paré, 2003). The 'Decentralists' argued that the only feasible approach is that of *laissez-faire*, rejecting any state regulations and supporting the idea of self-governance by private sector organisations. The 'Commons School' of thought supports the view that top-down regulatory frameworks created by government are needed to protect the general public and to ensure orderly provision of online services.

As governments and organisations have acquired greater understanding of the implications of establishing an adequate framework of governance for the Internet, there is growing acceptance of the need for cross-border treaties to bring order to what potentially can be a chaotic legal environment (August, 2002). One example of the treaty approach is the existence of the Council of Europe Convention on Cybercrime, which addresses the issues of data interception, data interference, system interference and illegal access to computers.

INTERNATIONAL JURISDICTION

Case Aims: To raise some of the complexities associated with seeking to apply a country's law in a cross-border context.

The global nature of the Internet has led to courts in various countries ruling on cases where cross-border jurisdiction is involved. The courts have used a number of legal principles to justify jurisdictional decisions. These include (Satola, 2007):

1. Territorial jurisdiction is applied when the alleged offence occurred within the territory of the state asserting jurisdiction.
2. Subjective territoriality allowing a state to prescribe laws with respect to conduct that wholly, or in substantial part, takes place within its territory.
3. Objective territoriality when the effects of the alleged criminal act are felt within the territory, although commissioning of the offence has occurred elsewhere in the world.
4. Nationality, where jurisdiction is on the basis of the nationality of the offender, irrespective of where the act was committed.
5. Protective principle invoked where the victim is the government or sovereign state threatened by actions committed elsewhere in the world.
6. Universality in the case of very serious crimes such as piracy, slavery, genocide or hijacking, which the state considers are grounds for invoking jurisdiction on the basis of a universal interest.

Unfortunately one country's interpretation of applicable law and jurisdiction may be disputed in another country. For example, in the US, personal data acquired by a website is presumed to be available unless the person affirmatively states that they do not want it disclosed, whereas in the EU, the presumption is that the subject's data is private and cannot be disclosed without their express permission.

Self-governance

With variations in the laws of copyright, IP and libel in different countries creates problems in relation to attempting to enforce actions through the courts, this situation has led to the emergence of attempts at self-governance. This involves private arrangements based upon a framework of clearly established legal rules. An effective example in terms of demonstrating the feasibility of cooperation and self-governance in the management of the Internet is provided by Wikipedia. By seeking to work within the framework of existing American copyright laws, Wikipedia has developed operational standards that are enforced in relation to the acceptable behaviour required of individuals submitting materials for inclusion on the site.

The legal implications of online copyright infringement became a high-profile issue in the late 1990s when the peer-to-peer service Napster rose in popularity. This free and quick downloading of copyrighted materials caused concern among the major recording companies, who in 2002 successfully sued Napster for vicarious and contributory copyright violations. A district court in America ordered Napster to monitor activities taking place on the company's network and to block access to infringing materials. Unable to comply with this order, Napster went bankrupt. Since then, new peer-to-peer services have circumvented this legal ruling in various ways, some for a limited period of time and some by avoiding actions that could provide the basis for successful legal action against them. Various governments have sought to strengthen the law over copyright issues in a variety of ways, but many of these efforts, such as the approval of the Digital Millennium Copyright Act (DMCA) in the US, have achieved limited success (Anon., 2008).

The creation of industry codes of practice, known as Principles, reflects the acceptance within the Internet industry that self-imposed regulation is necessary to close the gaps which exist in legislation such as the DMCA and the European Copyright laws. In order to be a practical solution, the philosophy behind the approach is that copyright owners will need to tolerate a certain level of copyright infringement because online service providers cannot be expected to be 100 per cent successful in filtering out illegal materials.

The existence of the Principles demonstrates that a middle-ground approach to Internet regulation is possible in that self-governance and private arrangements can shape online conduct and thereby work in tandem with formal governmental legislation. One of the benefits is

that the private sector is able to act immediately to mutually agree to the introduction of new filtering technology and not have to wait until such a requirement is mandated by new legislation.

A potential risk with industry agreements is these may benefit the large company signatories and disadvantage smaller organisations and the private citizen. For example, individual artists who retain copyright over their output may be too dispersed to effectively organise and jointly participate in ensuring the rights of the individual are being protected. The same constraint also applies to the private citizen whose non-involvement in the creation of collaborative agreements may be detrimental to their rights over fair use of online materials. Where such problems do emerge, then it is probably the responsibility of governments to intervene and protect the rights of the individual.

WEBSITE CREDIBILITY

Case Aims: To illustrate how content credibility can be affected.

Ultimately, to remain successful a website must ensure visitors perceive they are being provided with valid and truthful content. It is necessary to recognise, however, that content validity is subjective. This is because individuals' perceptions may differ depending on prior knowledge, prior experience, their goals or preferences and how relevant the subject is to their needs for information. To ensure that visitors are satisfied with the validity of content necessitates the marketer using formal or informal governance mechanisms (Kayhan and Bhattacherjee, 2013).

One governance mechanism is the use of a peer review process, where content is reviewed by a group of experts before being made available to the general public. Another approach is community-governance where the website permits visitors to add their views or ratings on the basis of knowledge or experience. Kayhan and Bhattacherjee concluded both these governance enhancers influence the views of website visitors. In those cases where the visitor is unable to assess the credibility of experts or community inputs, the tendency is to favour community-governance. This is because the visitor believes a large number of community members are less likely to provide inaccurate data than a small number of experts.

Anonymity

The ability of website providers to monitor the activities of site visitors has led to growing concerns over ensuring that such activities are not an invasion of a user's right to privacy. As consumers have become more aware of how techniques such as cookies permit websites to monitor their online activities there has been increasing pressure on the Internet industry to adopt a higher level of governance in terms of seeking users' permission prior to using technology to monitor visitor activity. One solution adopted by many web browsers is the provision of tools that allow users to specify their preferences regarding acceptance of cookies from websites. Whenever a website asks to send a cookie, users can decide whether to accept or reject the request (Cranor, 1999).

The rapid adoption of the Internet and mobile devices, plus a highly litigious culture, means many of the legal disputes over online materials have occurred in the US. In those cases where the offending materials have been anonymously published in an online newspaper or magazine, the publishers have sought to refuse to release the name of the source by relying upon the claim that in order to sustain freedom of speech, journalists should be able to protect their sources (Kissinger and Larsen, 2009). Although some journalists believe that this right is enshrined in law, in reality in most countries the courts do have the powers to demand a journalist should reveal confidential information or face going to prison.

The legal complication created by the Internet is that materials are being published using electronic channels. Hence the issue arises over whether actions brought by plaintiffs can be based upon long-established precedents over publishing libel, or whether the more relevant issue is that the publication is in breach of legislation relating to either telecommunications or the broadcast media. In the US, a number of cases have been brought on the grounds that publication of online materials by an ISP is in breach of decency rules that apply to the use of telecommunications. The courts have been required to rule upon whether an ISP can be held responsible for the dissemination of offending or defamatory materials. The case precedent on this issue was settled in *Cubby v. CompuServe*, where the court ruled that bookstores and newsstands face no liability for distributing offensive content they did not pre-screen, and that to require pre-screening would overly burden store and stand owners. On the basis of this analysis, the court held that ISP CompuServe acted less like a publisher and more like a bookstore owner or distributor who simply disseminates information and was not liable for content posted by a third party (Kaplin and Lee, 2009).

THINK BEFORE COMMUNICATING

Case Aims: To illustrate the outcomes of how online communications may lead to legal action.

The legal definition of defamation assumes this exists in two forms; namely libel which is a damaging statement in printed or written form, and slander which is a damaging spoken statement. Winning a libel case involves proving an untruthful printed statement was damaging to the plaintiff's reputation. Success in a slander case involves proving an oral statement damaged the plaintiff's reputation. The arrival of the Internet created the question of whether an electronic communication is libel or slander. As slander is more difficult to prove, defendants in Internet defamation cases prefer application of the slander standard. Plaintiffs prefer to bring a libel suit, because these are usually easier to prove than a case of slander (Townsend et al., 2000).

This same issue emerged when radio and television first became available. Initially, the courts tended to apply the slander standard to broadcast defamation. Eventually, however, the courts recognised the breadth of exposure and resulting damage from a defamatory broadcast was such that the libel standard was more appropriate. At the moment, in relation to the Internet, this whole area is a matter of dispute between plaintiffs, defendants, their respective lawyers and the presiding judge. Over time, however, it seems probable that the defamation decisions which were made in the case law concerning the broadcast media will become the same standard in relation to the Internet.

Tweeting can be an interesting but potentially risky activity, as is illustrated by the activities of Amanda Bonnen in Chicago. This lady was to be sued for defamation after tweeting about her landlord, Horizon Realty, alleging the company was prepared to tolerate tenants sleeping in mouldy apartments. Tweeting by Bonnen and her 20 online supporters probably annoyed the company and possibly did little to enhance corporate image, but in the end Horizon decided against proceeding with their lawsuit.

In a more highly publicised online dispute, after the designer, Dawn Simorangkir, also known as the 'Boudoir Queen', allegedly overcharged Courtney Love for some dresses, Love wrote a series of tweets accusing the LA-based designer of hacking into Love's computer, stealing clothes, dealing cocaine, losing custody of her child

and being a prostitute. Although the matter was settled out of court, the event demonstrates there can be extremely high financial risks of 'not thinking before tweeting' (Hill, 2011).

One of the issues which in the past has been used in mounting a defence in online defamation cases is the issue of the location of a blogger being some distance away from the location of the individual or organisation named in the blog. This defence apparently was presented in the case of *Internet Solutions* v. *Tabatha Marshall*. The company sued the lady for defamation in the Florida federal court. She sought dismissal of the case on the grounds of her lack of ties to the state. Having reviewed this defence, the Florida Supreme Court ruled that the location defence was not relevant because the lady had made her blog accessible to everybody anywhere by posting the materials on her own website (Hofman, 2010).

Protecting children

One of the greatest concerns over the Internet is the ease with which children can access what most parents would consider are unsuitable materials, such as that available on the numerous websites featuring pornography or excessive violence. Although politicians clearly perceive the benefits of responding to voter concerns over this issue, framing appropriate legislation has proved difficult. This is because many of these websites are located outside of the country wishing to control or ban access by children. In addition, in some countries there is the problem that such legislation is perceived by some as a constraint over the rights and freedoms of citizens.

One possible solution to protect children using the Internet is to apply existing statutes or laws concerning what are considered criminal acts (Anon., 2009). In the US, for example, one law that can be invoked is the 1977 Protection of Children against Sexual Exploitation Act. This law is concerned with the illegality of trading pornographic materials depicting children. The core of this Act concerns the illegality of transporting, shipping, distributing or possessing child pornography. The key issue which prosecutors have to prove is that the defendant 'knowingly' engaged in any of these activities. The advent of the Internet has created some new problems over proving knowledge because a commonly utilised defence is that via techniques such as malware and viruses, child pornography can be stored on the hard drive of a computer without the

knowledge of the user. As a consequence, the courts are facing the need to ensure only the right cases are being prosecuted, whilst protecting innocent defendants in those cases where receipt of child pornography was truly inadvertent (Bartoli, 2009).

Child protection legislation in most countries is based upon the premise that the parent has a fundamental responsibility to protect their children when using the Internet, through monitoring their children's activities and the use of blocking software. The problem with this philosophy is that many parents have limited Internet skills and hence are not capable of installing blocking software or monitoring websites and other online channels being visited by their offspring. Furthermore, even where parents have such skills, in many cases their children's knowledge of Internet technology is significantly greater. As a consequence children are able to block their parents' monitoring activities by removing their online usage footprint or by circumventing software blocking systems. In terms of the degree to which children are prepared to accept their parents' attempts to control their online activities, Seounmi (2008) concluded that this depends upon whether the parents have established a strong enough relationship, such that the children are prepared to adhere to their rules in relation to Internet usage.

INCREASING ONLINE RISKS

Case Aims: To illustrate that as the Internet and mobile technology continue to grow in popularity, this is accompanied by increasing risks facing children in an online world.

Possibly of concern, at least equal to those expressed over children's ability to access pornography, are the risks that can exist on social networking sites and in online chat rooms (Dehue et al., 2008). One problem area is that of cyberbullying where the child encounters messages and statements posted about them which are hurtful and, in some cases, mentally damaging.

Terrestrial bullying such as that which can occur in school can be extremely damaging to a child. It would appear that when bullying occurs online, adverse effects on the child are magnified. A key reason for this situation is that the Internet means that hurtful information is not just communicated to the child but additionally is made available to numerous other individuals who are also accessing the same social network or chat room (Chang, 2010).

Attempting to control any form of bullying is difficult, because in many cases the affected child does not tell their parents or teachers what has been occurring. A further complication in terms of attempting to protect children from cyberbullying is that there are difficulties due to issues, such as permitting freedom of speech, that create obstacles when attempting to pass laws prohibiting this type of behaviour (McCarty et al., 2011). As a consequence, in most cases the only feasible solution is for parents and teachers to encourage children to tell them when they have encountered cyberbullying and for parents and teachers to try to monitor children's activities when suspicions emerge that this activity is occurring (Goodno, 2011).

Of even greater concern is the fact that the Internet permits individuals to create fake personas that disguise their real identity. This activity is an all too common practice of adults who use social networking sites as a way of seeking to groom unsuspecting children. Legislating against such behaviour has proved usually a more feasible concept than laws concerning cyberbullying. This is because once an adult has been convicted of a sexual offence, the courts in many countries have the powers to control the activities of the offender.

As growing evidence emerged of sexual predators actively using the Internet, the US amended Federal laws to address the problem of online grooming in relation to crossing state lines with the intent to engage in a sexual act with an under-age person. Some States in America have gone further and introduced legislation specifically articulating that using the Internet service to attempt to lure a child, or a person pretending to be child, is a criminal offence. Similar legislation has been passed in Canada which makes even attempting but not actually succeeding in Internet luring a criminal offence. Action to stop online grooming in the UK was included in the 2003 Sexual Offences Act. Unlike the laws in North America, however, criminal liability only arises where a meeting, or travelling with the intention to have such a meeting, actually occurs (Nair, 2006).

Nair also noted that an area of increasing risk in the online world is the increasingly popular mobile phone which has an Internet link. As a consequence, children can engage in much more active acquisition and distribution of data involving a vast number of participants. Furthermore, because many phones are equipped with a

camera, users can also distribute video images. The problem is that once disturbing visual or text-based information is placed onto the Internet, it becomes increasingly difficult to track down the original source and have all materials removed by ISPs.

Mobile phones are a more powerful platform than fixed Internet access systems in relation to the potential for being a source of child abuse for the following reasons:

1. Rapidly rising market penetration with many children owning mobile phones offering Internet access.
2. There is minimal supervision of how and where children use their phones.
3. The filtering software such as a block on porn-screening access are opt-in default systems.
4. Technological convergence which means digital image capture and distribution is integrated thereby permitting users to easily distribute real time disturbing or pornographic events.

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15
Future Market Innovations

Yesterday's world

Europe was the original crucible in which the Industrial Revolution was forged, with the nature of national- and organisational-level wealth generation being changed forever. Although Europe was the initial centre of industrial innovation, by the end of the 19th century a new age was emerging in which technologies based upon advances in areas such electricity, electronics, computing, the internal combustion engine, jet propulsion and healthcare would totally alter wealth generation.

The world is currently recovering from the longest and deepest downturn since the 1929 Wall Street Crash, which, similar to this previous event, was triggered by irresponsible, possibly illegal, behaviour by Western financial institutions. The scale of this economic problem was exacerbated in Europe by some governments engaging in profligate borrowing to the point where debts could only be repaid through intervention by organisations such as the European Central Bank and the IMF (International Monetary Fund). Hence, in view of the nature of the adverse nature of the world's current economic landscape, the issues that marketers need to consider are (i) what might be the role of the Internet and related technologies in contributing possible solutions to some of the problems confronting the world and (ii) what are the new wealth generation opportunities that may be created as a result of further advances in Internet and related technologies?

Cyber warfare

Although hopefully the world will not again be involved in the global wars which occurred in the 20th century, countries still need to worry

about being prepared to be involved in conflicts and be able to defend themselves against aggression. In terms of the nature of the security threats now facing the world, these include cyber warfare, ballistic missile defence, state-sponsored terrorism, terrorism by fundamentalist groups and the possibility of a widening conflict due to political instability and differences in areas such as the Middle East and the Asia-Pacific Region (Yost, 2010).

Of all of these potential issues, possibly the one which has led to increasing concern among governments and the military in recent years is cyber warfare. This is because the world's communication, information management systems and infrastructure rely heavily upon IT and the Internet, and therefore can be easily damaged by attacks, which are extremely difficult to identify and in many cases cannot be predicted until after their occurrence. In addition, unlike most of the latest generation conventional military weapons, cyber warfare can be relatively cheap to wage. As a consequence, large countries such as China, Russia and the US, which rely upon the size of the military to deter attacks on their respective countries, now face the problem that cyber warfare can be waged against them by very small countries, small groups of terrorists and, at the extreme, single individuals with a personal desire to cause social and economic chaos.

Two key issues confronting the military are how does one (i) defend against cyber attacks and (ii) develop new approaches in cyber warfare to permit an effective attack to be delivered against a country's attackers. In reviewing these issues, the US Department of Defense (2010, p. 37) noted that:

> In the 21st century, modern armed forces simply cannot conduct high-tempo, effective operations without resilient, reliable information and communication networks and assured access to cyberspace. Moreover, the speed of cyber attacks and the anonymity of cyberspace greatly favour the offense. This advantage is growing as hacker tools become cheaper and easier to employ by adversaries whose skills are growing in sophistication.

Hensgen et al. (2003) suggested attacks can be considered as conventional or unique. Conventional attacks involve disruption to information infrastructures through well-known methods based upon widely available knowledge to create viruses, worms or distributed denial of service (DDOS) against servers operated by major public or private sector organisations (Denning, 2003). Unique attacks are those when

a specific major target is selected and a new technological advance is utilised to mount a radically different attack strategy.

Hughes (2010) proposed that in the second decade of the 21st century, many aspects of cyber warfare will shift from the traditional military battlefield to the public sphere. He noted that the US Department of Homeland Security has issued statistics showing that reported attempts to breach security on both private and government computer systems increased from 24,000 in 2006 to 37,000 in 2007 and that the FBI estimates that 108 countries have dedicated cyber attack capabilities.

Although the US took the early lead in cyber warfare, since 2007 a number of states have begun to bolster their cyber defences. These initiatives have included everything from recruiting future cyber warriors to establishing full-blown cyber commands. For example, the UK has announced a cyber security project as a component of the country's National Security Strategy (NSS) with the formation of two new bodies: the Office of Cyber-Security (OCS) of the Cabinet Office and the Cyber-Security Operations Centre (CSOC) (Ballard, 2010).

As China becomes the largest economy in the world, it can be expected that this will be accompanied by development of a military capability appropriate for supporting political ambitions as one of the world's wealthiest nations. Included in upgraded capability, it is probable the Chinese People's Liberation Army (PLA) will aspire to challenge America's dominance in cyber warfare technology. It is estimated that 30,000 individuals are employed in China monitoring both state and public computer systems and some of these individuals already possess the necessary training and expertise to engage in cyber warfare. The UDS joint strike fighter project and the USAF air traffic control systems have been reported as PLA targets. Google accused China of facilitating hostile attacks on the company's information systems (Sheridan, 2010). In 2014, the FBI identified a number of individuals in China and claimed that they had hacked into confidential files of virtually every major US corporation.

The arms industry, during peacetime, generates revenue from supplying the next generation military solutions to the government in their own country or to allies of that country, whilst marketing current or obsolete technology to other countries. With the increasing interest in cyber warfare, major producers of military equipment and services, such as BAE in the UK and Boeing in the US, have already established new divisions to expand and market these companies' capabilities in cyber warfare technology. A significant proportion of the knowledge

concerning how to disrupt and protect IT systems is vested with organisations outside the arms industry, such as Google, IBM, Intel, Microsoft and Oracle. It can be expected that these organisations are engaged in the provision of cyber warfare services to governments. For both market image and corporate security reasons, these companies make little or no reference to such activities in publicity concerning their involvement in this rapidly growing sector of the IT industry. Nevertheless, given the increasing interest in cyber warfare among governments and the military, it can be confidently predicted that significant revenue growth will accrue to firms involved in this new way of making war.

Unlike most other forms of warfare, where the aim is to destroy the enemy's equipment, people and logistics systems, in cyber warfare the primary targets are civilian targets, such as utility switching systems, organisations' computer systems and private citizens' links to the Internet. As a consequence, this means that, unlike the arms industry where customers are mainly governments, cyber warfare suppliers will be able to generate incremental revenues from the civilian corporate markets, the public sector and the general public (Knapp, 2006).

CYBER WAR GOES LIVE

Case Aims: To illustrate that certain forms of cyber warfare are already being used by countries.

Although the concept of cyber warfare might be seen as something from science fiction, in reality the world has already experienced such events. In April 2007, Estonia suffered a ping flooding attack. These attacks were carried out by 'hacktivists' which it is claimed were Russians. The first attack was followed by a larger scale botnet attack in May 2007. The botnets accessed over a million computers located in about 100 different countries. During the period between 10 and 15 May, Estonia's banks came under attack and two had to shut down their online services. The attack was not continuous, but came in waves suggesting that it was a centrally controlled, coordinated attack (Kelly and Almann, 2009).

A more overt attack on military systems occurred in August 2008, when prior to the Russian army invading Georgia, a cyber attack was used to cripple the IT systems of the Georgian military, including the country's air defence system. The Georgian military was forced to resort to the US government and Google to remain in operation

while advisors from Estonia assisted in attempting to defend Georgia from this cyber onslaught (Krebs, 2008).

These two attacks were preceded by other similar events. For example, in 2000, Israeli operatives disabled the public websites of Hezbollah and the Palestinian National Authority (PNA). Then, in 2007, Israel launched a successful cyber attack on Syria's air defence network, which aided the Israeli Air Force when undertaking a bombing raid on a suspected nuclear plant under construction in Syria. Israel may also have been involved in the Stuxnet virus which invaded Iran's nuclear facilities. The virus severely disrupted industrial processes associated with nuclear enrichment necessary for the production of atomic grade bomb uranium, by the use of programmable logic codes that increased the rotation speeds of centrifuges to the point where these centrifuges self-destructed (Greengard, 2010).

Smart sensors

The advent of smart sensors has significantly enhanced the ability of organisations to monitor events such as products being used by customers or to monitor the performance of equipment in remote locations. Assisting consumers based upon their location has already become a standard component of smartphones, such as Apple's iPhone. Users can use the phone to identify their current location and seek relevant data about local restaurants or specific retail outlets (Hu et al., 2008).

Prosser and Schmidt (1999) proposed that the term 'smart' cannot be applied unless the sensor is able to sense and then actuate an action which permits some form of controlled outcome.

The capability of remote sensors in recent years has been advanced by the development of biosensors. These devices incorporate a biological sensing element consisting of a bio-molecule connected to a transducer. The sensor is capable of producing a signal in the presence of a specific chemical or biochemical agent. Biosensors have a number of characteristics, with the most important being their ability to recognise a single compound among numerous other substances within a sample. One example is the glucose oxidase sensor. This has the capability to measure the level of glucose in blood and urine for the diagnosis of diabetes.

Smart sensors linked to a central monitoring station offer many more opportunities in the field of crime prevention and personal or facilities security. This is because detection devices can be placed in any location

with the advent of the Internet, vitiating the need for the sensor to be hardwired into a control system. As already evidenced by the rise in cybercrime in other areas of Internet usage, one of the challenges accompanying the increased use of smart sensors networks is to ensure these systems remain secure (Roman and Lopez, 2009).

Another area where scientists and engineers perceive significant opportunity for exploiting smart sensors linked to a central system is in the automation of environments within structures such as homes and offices. As well as creating security systems providing more coverage of interiors and exteriors, sensor networks offer the opportunity to upgrade the energy efficiency of buildings. This is achieved by the sensors providing temperature and humidity data across multiple locations. These data are analysed by a remote central system and where the actual physical conditions do not conform to parameters pre-programmed into the building's heating and cooling systems, the system can initiate appropriate action to remedy any identified variances (Kintner-Meyer, 2005).

The approach of using networked sensors to manage properties is often known as creating 'intelligent buildings'. Although architects are very enthusiastic about the opportunities offered by creating intelligent buildings, the speed with which this can occur is determined by a need to reduce the costs of smart sensors. The other problem is the required location for many sensors is some distance from available power lines and hence there is a need to rely on battery powered sensors. This demands a way to either find new methods of lengthening the battery life of sensors or alternatively creating self-powered devices, such as sensors that convert building vibrations into electric power for recharging the sensor's batteries (Clements-Croome, 2011).

SMART CLOTHING

Case Aims: To illustrate the emerging opportunities for smart products in the textile and garment industries.

The clothing industry, although somewhat of a late entrant into the world of smart technology, has in recent years begun to exploit the commercial opportunities associated with creating smart textiles. Tang and Stylios (2006) used the term 'smart' to refer to materials that can sense and respond in a controlled or predicted manner to environmental stimuli which have been received in mechanical, thermal, chemical, magnetic or any other form of input. The nature

of response can occur in a number of different ways. Visible direct response can include automatic changes in shape, colour, geometry, volume and other visible physical properties.

An example of a direct response is to use fabric dyes that are able to change colour with a change in the presence of environmental stimuli such as heat, light, chemical reactions, moisture, pH, pressure and electrical currents. This response can be used to enhance the potential aesthetic appearance of fashion garments or as a detection and response mechanism for garments worn by people in high risk environment situations. For example, in the medical field, garments are being developed which can detect and warn of the presence of infections, bacteria or viruses. There are also opportunities for garments to change appearance when the wearer exhibits some form of physiological distress. In the fire-fighting sector, thermochromic dyes have been engineered to change the protective clothing to white under extreme temperatures in order to reflect more heat away from the body.

Further evolution of the smart clothing concept has been possible by technologists harnessing the ways that changes at a molecular, magnetic or electrical level not apparent to the naked eye are able to trigger controlled reactions or functions. This change generates signals that can be detected by a smart sensor, analysed and evaluated by a processor, which in turn feeds back to actuators to perform a particular function. The simplest smart electronic garments contain rigid sensors incorporated in the garment structure. These sensors can continuously measure and monitor various physiological functions, such as body temperature, blood pressure, heart beat and perspiration, with the data transmitted via the Internet wireless to a remote central monitoring unit for control and feedback. Early exploitation of this technology is occurring among manufacturers of clothing for sectors such as healthcare, the military and emergency services such as fire-fighting and the rescue services.

Transportation automation

As far as scientists and engineers are concerned, humans come with a number of defects and design faults. These include:

1. A physical structure which is easily damaged or destroyed and cannot operate in extreme environments, such as inside a nuclear reactor.

2. Having only a limited capacity to acquire and process data in order to rapidly reach a decision.
3. Significant variation between individuals in terms of their capacity to acquire and process data in order to rapidly reach a decision.
4. Significant variation between individuals' sensory abilities, such as sight, hearing and spatial awareness.
5. A limited ability to remain focused on a specific task.
6. A physical structure that requires food, adequate clothing, accommodation and sleep.

As a consequence of these attributes, there are many situations where activities could be undertaken more successfully, effectively, efficiently and safely by removing the involvement of humans entirely. This scenario has been widely recognised by scientist and engineers, but implementing de-manning has been limited by the technological obstacles of finding an effective substitute. The advent of the computer is seen as a critical step because the technology can process, store and re-access data at much greater speeds and reliability than the average human.

To exploit the opportunities offered by a computer, a key variable is how to acquire data without the intercession of a human. The move from hydraulics to fly-by-wire technology provided an opportunity to rapidly generate high volumes of data in an electronic form which can then be analysed and exploited using IT. As a consequence, the aerospace industry has been able to generate next generation aircraft such as the European Typhoon fighter that is capable of undertaking manoeuvres which would be aerodynamically impossible in earlier generation aircraft or in an aircraft under the total control of a human pilot.

The remaining obstacle in de-manning is that traditionally people have been required to provide the spatial awareness of where the machine is currently located and to use their sensory inputs, such as sight and sound, to ensure the machine progresses in the right direction and also avoids collisions with either moving or static objects. In terms of developing machine-based spatial awareness, this is now possible due to advances such as GPS, digital mapping and the Internet. The final requirement was the development of the smart sensors which when coupled with cameras and visual recognition software components created a complete system to permit removal of the human from the operating system.

Although many scientists and engineers recognised the benefits of using IT to create autonomous machines in all areas of life, the earliest, most successful developments occurred within the military area where

the use of robots to reduce the need of putting humans in 'harm's way' saw the introduction of Unmanned Aerial Vehicles (UAVs) and bomb disposal machines. The initial use of UAVs (or 'drones') was in the acquisition of intelligence about the enemy. This type of drone is cheap to manufacture, operate and maintain when compared to an aircraft or satellite-based data acquisition system (Davies, 2011).

The opportunities of vehicle de-manning have not gone unnoticed in the civilian world. Some of the first innovations occurred in mass transit systems such as those used to transport passengers around airport terminals. Although a technically complex development, the scale of the problems confronting the designers was reduced by having vehicles travel on a fixed track between clearly defined destinations, not overtaking each other and, unless there is a technical error, never coming very near to any other de-manned vehicle.

As more countries seek to manage the effective transportation of ever large numbers of people living in large cities, further de-manning of mass transit systems offers the appeal of greater economy, safety and reliability. It is estimated that by 2020, around 70 per cent of new metro lines will be fully driverless and among a large proportion of the remaining driver-operated trains, there will eventually be moves to convert these into automated systems.

Increasing attractiveness of unattended train operation (UTO) systems has emerged as a result of ongoing advances in technology such as CCTV-based track and platform supervision, on-board emergency calls and on-board telemetry. Additionally, advances in sensor and digital communications mean remote fault-diagnosis is entirely possible. Added to this capability, advances have been made in safety technology, using sensors and on-board computers to undertake tasks such as precise door-gap assessment and fire detection.

The usual appeal of automation is the achievement of cost savings and increased efficiency. Another benefit is that machines do not require time off to rest or take vacations. Possibly the most difficult aspect of automation is where people are present. This is because people are unpredictable and can therefore create problems for the machine. Hence advances in terrestrial transportation have tended to occur in cases where savings in labour costs can be achieved and humans can be totally removed from the operating environment. One early example of this scenario is in warehouses where it has become possible to remove people from the working environment and replace them with automated inbound stacking of deliveries and outbound order-picking vehicles. The constraint in replicating this approach in external environments

is the issue of developing machines with sufficient spatial awareness to cope with visually changing geography. However, advances in telemetry and sensors are providing solutions and, for example, some of the large surface mines in Australia are already experimenting with automated large earth-moving equipment and trucks.

SOMETIME IN THE FUTURE

Case Aims: To illustrate the current status concerning the development of the driverless car.

Probably the next advance in human factor engineering is to remove the driver from cars and other road vehicles. This idea has existed ever since the first cars appeared on the road and started to frighten horses or injure pedestrians. However, it was not until the 21st century when the US Defense Advanced Research Projects Agency (DARPA) issued the first competition for driverless cars, that inventors, designers, scientist and engineers began to give serious thought to achieving this outcome.

In the first year, no team successfully completed a 150-mile desert course but just three years later six teams completed the more demanding 60-mile DARPA Urban Challenge. This competition required driverless vehicles to traverse an abandoned military base, obeying traffic lights and stop signs, avoiding obstacles, yielding at intersections and merging with traffic (Brown, 2011).

In terms of the general public becoming aware of the feasibility of the driverless car, this occurred when Google announced that for some time the company had in operation around the Google headquarter complex in Mountain View six Priuses and an Audi TT, all of which had someone in the driver's seat but whose hands were not on the steering wheel. Even further amazement was generated when Google admitted these vehicles had been tested on public streets, undertaking activities such as coping with the tight turns of San Francisco's Lombard Street, crossing the Golden Gate Bridge and circumnavigating Lake Tahoe.

The Google vehicles, similar to those entered in the DARPA competition, utilise three key components; namely sensors, a mapping database and software that uses inputs from the sensors and the mapping system to manage the car's movements. The car's computer is provided with spatial awareness data using a rotating pulsed laser system. Other sensors include an automotive radar to provide

greater range at lower resolution, a video camera that detects traffic signals, pedestrians, bicyclists and any other moving obstacles, a GPS positional system and an inertial motion sensor. As a further source of data and to increase project safety, before each test drive a conventionally driven car maps the route and road conditions and this data is provided to the driverless car.

Experience gained by Google and entrants into the DARPA competition have greatly expanded understanding of the technological problems associated with creating a driverless vehicle. As noted by Brown, this acquired knowledge has permitted scientists and engineers to conclude it will be some years before a commercially feasible driverless car will be made available to the general public. Furthermore, even when such a goal has been achieved, there is still the unresolved issue of whether government agencies and the general public will accept the presence of driverless cars on roads also containing conventional vehicles. This is despite the fact that the driverless car will probably be safer and result in more efficient and effective road travel.

Smarter operations

Although concepts such as using smart technology to monitor the contents of peoples' refrigerators and advise them when restocking is necessary are all very interesting, the near-term opportunities to implement large-scale exploitation of smart technology are more likely to involve enhancement of the management of operational processes to optimise the efficiency of supply chains (Connolly, 2007). In terms of managing operational processes, there are now a diversity of sensors in use to assist manufacturers in creating automated systems to identify and rectify production problems. For example, Cognex Corporation has developed a smart imaging sensor, which when used in conjunction with gauging, guidance and inspection tools installed at multiple points on a production line, can inspect for defects, measure parts, monitor colour, sort and count products. Technology GmbH's Raycon device uses low-level X-rays to inspect for contaminants in packaged goods, checks the weight of individual products and identifies products which are not correctly filled or contain air inclusions.

Smart technology has also further enhanced automated exploitation of data interchange between members of supply chains. These developments have assisted in enhancing the efficiency of activities such as

'Just in Time' (J.I.T.) manufacturing by (a) permitting automatic identification of a potential parts shortage and (b) placing a re-stocking order via the supplier's order-entry system (Speier et al., 2008).

One of the most critical developments in improving supply chain efficiencies management has been the development of radio frequency identification (RFID) technology. This is an e-based tagging technology that can be used to provide electronic identity to any object. By attaching a RFID tag to a product, organisations can then follow the product through every stage in the supply chain, even when the actual product is inside a box or crate. In the case of retail products, the RFID tag can be used to support automated pricing of goods at the point-of-purchase by the consumer and provide a way of reducing in-store theft.

RFID tags are microchips that are embedded in the product, pallet or case, which store and transmit information about the specific unit. These tags consist of an integrated circuit attached to an antenna. They are available in a diversity of forms with some now as small as a grain of rice. The tags can be passive or active. Passive tags are less expensive because they do not have their own power supply but respond to the radiated energy from a RFID reader to transmit information. Modern supply chain management (SCM) systems are critically reliant upon these tags to lower procurement costs, permit smaller inventories, shorten order/delivery cycle times, increase response times and reduce forecasting errors. The US Sara Lee Corporation reported RFID technology has permitted an 18 per cent reduction in inventory levels, a 20 per cent reduction in replenishment time cycles and greater forecast accuracy leading to a 30 per cent increase in sales. The US retailer, Wal-Mart, has concluded that their SCM system led to a $6.7 billion saving in labour costs as a result of exploiting RFID technology (Attaran, 2007).

As the cost of RFID continues to decline this has accelerated the diverse use of the technology across various sectors. In the agriculture sector, increased government regulation about food traceability has resulted in RFID tags being used to meet traceability requirements at a reasonable cost by the farmer attaching a tag to each animal. In the healthcare sector RFID technology is used to track and manage assets, such as medical devices and wheelchairs. Medications and dosages are now being tagged so doctors and nurses can ensure that the right medicine is given in the right amount at the right time to the right patient. These same tags also assist drugs manufacturers in reducing drug counterfeiting and theft. Similarly, some casinos are now tagging their betting chips to deter counterfeiting, card-counting and other illegal activities.

A recent further advance in RFID technology has been the development of the Quick Response (QR) code by the Japanese corporation, Denso-Wave. Initially used for tracking parts in vehicle manufacturing, QR code utilisation has been expanded into other commercial tracking applications and permitting mobile phone users to scan a printed code in a newspaper or on a package. The code contains a URL link and hence the link permits the user of the mobile phone to be automatically directed to the code owner's website. The reason why mobile phones can read the code is because QR is essentially a picture containing encoded data. As a consequence, the code can be captured and then read as an image by a digital camera on devices such as a mobile phone or laptop computer. Installed software reads the QR code, decodes it and then automatically links the user to a location, such as an online store or a company website (Lorchirachoonkul and Mo, 2010).

Healthcare

Possibly one of the most important opportunities offered by smart sensors is that the technology appears to offer the most viable solution for significantly reducing future healthcare costs. One way of reducing healthcare costs is to utilise the capability of smart technology to manage and exploit the data which is generated during the diagnosis and treatment of patients. It can be expected that effectiveness of m-health will continue to be enhanced as information and telecommunication infrastructures converge to create new mobile health systems. This is because mobile technology can offer benefits in the areas of availability, miniaturisation, speed and communication bandwidth (Simpson, 2003).

By utilising wireless-based computing, healthcare providers can access, receive, update and transmit critical patient and treatment information. Computer-based documentation of care will assist in eliminating the human error that can take place in translation in the recording and storage of patient records. Additional benefits will accrue from the use of picture archiving and communication systems (PACS) which permit the computerisation of radiologic film. Users can acquire, store, transmit and display images digitally, which permits, for example, linking the intensive care units in hospitals with the radiology departments and medical staff based in other locations.

Computerised provider order entry (CPOE) systems are capable of identifying and thereby preventing potential medical errors at the

earliest possible point in the treatment process. The healthcare provider enters proposed action into the computer and the automated system checks for possible causes of error such as incorrect dosages, wrong drug, drug-allergy interactions and drug-to-drug or drug-food allergies. This technology removes the guesswork from medication administration, reduces staff stress levels, improves clinical effectiveness and enhances productivity by allowing staff to focus on patient care rather than paperwork.

Even greater opportunity for the use of m-health to enhance the effectiveness of healthcare provision is the use of remote telemetry to monitor patients. For example, in the case of patients undergoing treatment for heart conditions, a computer-based system can provide automatic monitoring of major arrhythmia detection through continuous observation and analysis of rhythms. Thus, when a patient experiences a potentially life-threatening rhythm change, the monitoring unit concurrently places a phone call and sends a nurse to the patient location (Capuano et al., 1995). New technologies are allowing organs and bodily functions to be permanently monitored by doctors when the patient has returned home after surgery. Bio-analytical micro-systems can be used to determine blood sugar concentration and provide guidance to the patient over self-treating conditions such as diabetes.

Reviewing futures

One of the few entrepreneurs who understood the risks associated with the commoditisation of products was Bill Gates, the founder of Microsoft. While the big players in the IT industry fought to dominate the market for PCs he recognised that a more profitable long-term future could be achieved by focusing upon becoming a dominant supplier of widely utilised software. In addition to the success enjoyed by Microsoft over the years, other entrepreneurs who have also recognised the benefits of focusing upon supplying software or software-based services include Larry Ellison at Oracle and Larry Page and Sergey Brin, the founders of Google.

A recent example of the risks of commoditisation was demonstrated by the intense competition in the mobile phone market, as first-mover companies such as Nokia faced increasing competition from lower cost phone manufacturers located in the Far East. As with other sectors, providers of service – in this case the mobile phone network providers such as Vodafone and Orange – have continued to enjoy a more profitable existence. In addition to facing price competition from new Far East

market entrants, companies such as Nokia endured significant loss in market share following Apple's introduction of the smartphone.

Prior to Apple's success in the smartphone market, the company was rescued from decline by the return of Steve Jobs who provided the strategic redirection that led to the launch of the iPod product concept. This was then followed by the launch of the iPad. To a certain degree the ongoing success of the iPod was achieved by Apple persuading the record industry to accept the concept of iTunes which provide low cost access to consumers wanting to download their favourite music tracks. In that sense the iPod is an example of how service provision is a more stable and less competitive market position than seeking to generate revenue from selling computer hardware which links users to the Internet.

The iPad was initially an extremely successful product concept. The drawback is that Apple has been unable to stop the technology becoming understood and utilised by other firms. Furthermore, Apple was unable to gain a lock over services that can be accessed by the product. As a consequence, the iPad is facing price competition from both other manufacturers and also other service providers such as Amazon, who have the benefits of (a) greater access to downloadable materials and (b) utilising their Kindle product not as a core revenue proposition, but merely an adjunct to the provision of a broad portfolio of online transactions and services.

In the case of the iPhone, Apple has adopted a product plus services model for their smartphone through authorising software developers to offer apps which run on the company's phones. In return for granting approval, Apple earns revenue from a commission charged every time one of these approved apps is downloaded by users. Nevertheless, the company's awareness of commoditisation in the IT industry and the benefits of remaining a pure service provider must clearly cause senior management concern that Google has again implemented a pure service model by making available their Android operating system to smartphone manufacturers who are seeking to compete with Apple.

Frequent re-occurrence of the financially damaging effects in various electronics markets, from televisions through to laptop computers, as a result of either intense price competition or commoditisation in various electronics markets, raises the issue of what are the best i-Strategies for optimising revenue in an online world. On the basis of the available evidence, sustained success appears to come from (a) developing the next generation of technology to sustain advances in products which underpin even more effective exploitation of the Internet to deliver online services (e.g. Intel's ongoing investment in next generation microchips

and Google's Android system to support m-technology products); (b) using the Internet as a new delivery platform for an existing service (e.g. Amazon's entry into online retailing and the emergence of pure play websites in the travel industry); and (c) exploiting the Internet to provide even higher levels of service for existing goods (e.g. the websites of major supermarkets).

On the basis of events since the Internet first moved from being a research system for linking together scientists to a commercial system which has achieved a massive commercial impact on a global scale, regular in-depth reviews of current i-Strategies by organisations should not be restricted to those who are mainstream players in the current online world. This is because these existing players, in the face of intense competition in their mainstream markets, are actively seeking new opportunities in any other areas of the private and public sector engaged in the acquisition, storage, analysis and distribution of digital information. The new opportunity search by these firms represents a major threat because organisations in other industries may face the mainstream players finding a way of entering other sectors with the potential to exploit understanding of advanced technologies or cloud-based business analytics to gain new understanding of how to deliver superior customer satisfaction.

This outcome has already been demonstrated by IT people from outside the car industry developing the highly successful Tesla car, Apple's move into telecoms, and Google entering the optical industry with smart spectacles. It is also very apparent that Silicon Valley entrepreneurs are actively engaged in major projects involving the provision of new service goods concepts in both the private and public sector. For example, companies such as Apple and Google, with their e-wallet product for authorising online payments using a mobile phone app, are clearly interested in taking market share from the banks and credit card companies in the financial transactions industry. Similarly in the media industry, these same two firms are actively seeking ways of becoming major players in using the Internet to broadcast a diversity of online entertainment offerings. In the huge and ever expanding market for healthcare, Microsoft are developing new products associated with the management of medical data and the provision of a broad portfolio of telemedicine services.

In the mid-1990s, many major organisations adopted the view that the Internet represented neither a threat nor an opportunity (Chaston, 2000). Given slow download speeds, a limited number of individuals with Internet access and the expensive, complex nature of back-office

software systems, at that time this was probably a reasonable conclusion. Almost two decades later, however, the massive increase in the number of people using the Internet, advances in technology and the advent of online access via mobile devices has completely changed this situation. It must now be assumed the Internet will continue to have an ever increasing impact on the future operations of virtually every public and private sector organisation. Furthermore, the scale of this impact can be expected to increase as the major players in the IT and telecoms industry seek to sustain ongoing revenues by moving out of their core online markets and seeking to offer new Internet-based services in sectors such as finance, healthcare, entertainment and public sector service outsourcing. As a consequence, few organisations can continue to perceive the Internet as a non-threatening technology. Accompanying this conclusion is the reality that any organisation which fails to create and then regularly update their i-Strategy is likely to face a very uncertain future.

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Erratum to: Online Governance

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