Edited by
MEIR RUSS

VALUE CREATION, REPORTING, AND SIGNALING FOR HUMAN CAPITAL AND HUMAN ASSETS

Building the Foundation for a Multi-Disciplinary, Multi-Level Theory

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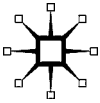

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This book is dedicated to my one and only.
Thank you Fay for being my rock, my dream, my life.

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Foreword

Leif Edvinsson

Perspectives on Human Capital

"Human Capital is our most important asset" is a common phrase, among others, in executive speeches and annual reports. However, this might need rephrasing or a deeper understanding of other perspectives. This impressive book with all its references adds to this deeper understanding of human capital (HC).

HC is a multidimensional, multilevel, interdependent, and very complex issue. To start with, capital means "head" in Latin. So HC would then mean "human head." Is it the cranium or its content processing that is HC? Arago 21 is the name given to a most important discovery, which dates back about 450,000 years, the cranium of our ancestors. In the small village of Tautavel, in the Roussillon region south of France, there is a cave, where one of the oldest archaeological remains in Europe, *homo erectus tautavelensis*, was discovered, and then named Arago 21.

Perhaps the dimensions of the head and brain are the most intriguing, with our recent research discoveries in neuroscience. Just think of the discoveries of mirroring neurons as critical brain flow for learning. HC might carry the intelligence for knowing as well as a capability to renew. This perspective might be the most intriguing.

The term "human" capital implies that it is different from "physical" capital. In the above quote, HC is regarded as an asset in the accounting perspective. It is also regarded as a soft asset, so accounting rules might be less apt. Consider the challenge of having a vast number of employees, or citizens. Does this automatically imply or create a greater HC? Then think of Singapore or WhatsApp with a relatively limited amount of HC but a lot of value creation, as financial capital (FC)!

In Japan and Asia, the term HC often relates to intangible values. Should HC be regarded as a liability or a "renting of talent"? This perspective is based on the idea that HC is organic, potential, renewable, and also volatile. Such a perspective might stimulate us to think in terms of how to nourish and realize human potential,

This perspective might lead to the longitude dimension of HC. This is the third dimension of management, beyond altitude and latitude. Something that I addressed in a book on knowledge navigation, see www.corporatelongitude.com.

The value dimension of HC might be outside itself. It is found more and more in the networking capability, as an externalized variable. Today, this is often referred to as the relational capital. This is visible in the new, so-called networking economy or even more visible in the App economy. This new phenomenon, according to the European Commission in a recent report on App ecology, is to grow in Europe from close to 2 million jobs in 2013 to around 5 million jobs in 2018! And then look at WhatsApp, with around 50 employees and more than 500 million daily active users, as of April 26, 2014 . . . (and recently its stock was valued at 16 billion USD by Facebook). Are those traditional employment jobs, or networked contracting jobs more or less outside the traditional statistical employment codification? If so, what about the distortion effects on unemployment statistics especially of youngsters?

Many of those dimensions are integrated in the concept of intellectual capital (IC). I have been pioneering this subject for more than 20 years (see more in *Journal of Intellectual Capital* 14, no. 1 (2013)). IC actually means future earnings capabilities, as well as derived insights of head value. And, to simplify, it is HC combined or multiplied by structural capital (SC), which involves relational capital (RC) as well as organizational capital (OC) systems. WhatsApp might be an intriguing illustration at an enterprise level.
To address the interdependencies of HC, Professor Jay Forrester at MIT started to develop systems dynamics simulations in the 1970s, both for enterprises and for nations. In early 2000, this was adopted and refined into a very successful approach for enterprises in Germany. The Ministerium fur Wirtschaft initiated and supported a nationwide program in Germany. For more details, see www.akwissensbilanz.org. In Germany, it is called *wissenskapital*, or knowledge capital. For more details on the system dynamics approach and application in several EU countries, see www.incas-europe.org.

However, this is also applicable at the macro level. Then it is called national intellectual capital (NIC). Emerging research is now progressing with interesting databases and studies. See www.NIC40.org Countries like Singapore, United States, and the Nordic countries are in the top league.

Japan and other Asian countries have been applying a lot of these "soft" or intangible dimensions for more than 20 years. Now, to address the importance of the mapping of intangibles, in 2013, the U.S. Bureau of Economic Analysis have initiated an impressive metrics approach to become more focused on NIC, and will update the national database on intangibles (going back to 1929) for better mapping. For example, effective from July 1, 2013, R&D is regarded as an investment rather than an expense. See more at www.businessweek.com/articles/2013–07–18/the-rise-of-the-intangible-economy.

Thus, mapping of the NIC is highly correlated with the HC dimension as a basis for renewal and futurizing. Therefore, combined with the insights from this well-researched book, we hope for improved systematized national IC policies including HC to address the renewal and well-being of nations and their citizens.

Happy Reading!
Leif Edvinsson
The world's first director of Intellectual Capital
The world's first professor of Intellectual Capital
Co-founder and chairman of the New Club of Paris
Awardee 2013 for Thought Leadership by Peter Drucker Foundation, European Commission, and Intel

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Acknowledgments

A call for chapters challenged potential authors to consider a unifying, multilevel theory of HC arriving from different academic traditions and perspectives. The authors were invited to contribute to the book based on approved proposals. Each complete chapter received external, blind review in addition to the editor review. The author thanks Kelly Anklam for her assistance in editing this introduction, and also wishes to thank the Frederick E. Baer Professorship in Business and the Philip J. and Elizabeth Hendrickson Professorship in Business at UW-Green Bay for partial financial support. Finally, the author hopes that the discussion of creating a unifying, multilevel theory of HC will continue based on the chapters presented in this volume.

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INTRODUCTION

Homo Sustainabiliticus and the "New Gold"

Meir Russ

Introduction

Value creation and innovation are the hallmarks of successful individuals and organizations in the new knowledge-based economy. But what is it that we really know about the specific role of human capital and assets, and their interactions with other capitals, like social capital, in the creation of value? Further, once the value is created, how is the significance of human capital and assets reported? This book will focus on these aspects by using an interdisciplinary, multilevel lens of research.

The discussion about value creation and reporting can use the narrow approach of the present legal and economic perspective. Some chapters in this book are doing that and are providing very interesting insights at multiple levels from different research perspectives by using diverse research methods and tools. But some of those assumptions are questionable at best—for example, the framing of education as a product or service consumed by an individual and boosting one's individual human capital and as such being subject to a fair price; or framing education as a "collective good" that is a right of an individual and supports the human capital of a region or a country (Kratochwil, 2014, p. 28); or the causal relationship between education and economic growth (Pritchett, 2001; Wolf, 2002). Another example is how the boundaries of risk assessment and risk management interact in unexpected ways (Taleb, 2014) and question the legal

framework of how knowledge and action interact in praxis, having an impact on the creation and valuation of intellectual property (Kratochwil, 2014, p. 10). The aforementioned examples illustrate two bigger issues in my opinion: the new knowledge-based economy is completely different from anything we, humans, have seen, and the current market and legal structures are inadequate at best for helping the majority of the population and institutions to deal with this extraordinary change (e.g., Rainie & Wellman, 2014; Rickards, 2014; Rifkin, 2014). The complex and interdisciplinary nature of the issues, their causes, and potential solutions require a broad scope of discussion. The issues are too important to leave them to politicians, bureaucrats, jurists, sociologist, historians, philosophers, or economists (Kratochwil, 2014, p. 29; Rickards, 2014, p. 2; Taleb, 2014) or to settle down too early on a specific methodology or scientific discipline, which will limit the scope of discussion, sidestepping aspects resulting from praxis and preventing a timely and appropriate solution (Kratochwil, 2014, p. 34; Orlikowski & Scott, 2014). One only need to look into the unemployment and underemployment of the young generation all over the world (Rifkin, 2014, p. 121), the growing pace of the busting of economic bubbles (Rickards, 2014), the rapidly increasing economic inequality (Piketty, 2014), or the growing pace of weather change (Kolbert, 2014) to realize that the need for such a discussion is urgent.

In this introductory chapter, I will question a few of the underlying assumptions about the present legal framework and the market economy, and propose some ideas to frame and advance such a desperately needed discussion.

Law

The *role* of law arrived to the front of the economic and business discussion following the 2007–2008 crisis. "Law might have become part of the problem rather than the solution" (Kratochwil, 2014, p. 2), since it is hardly a neutral mechanism, endowing specific interests (in our case financial capital) with privileged status (Kratochwil, 2014, p. 9). For example, during the 2007–2008 crisis, governments and central banks' interventions resulted in the "socialization of risk" of the large banks, while the individual profits were privatized—all in the name of market efficiencies. These actions questioned the very basic premises and authority of markets within the framework of the law, "it does mean that politics and law will have to find new instruments, instead of treating the market as the ultimate authority" (Kratochwil, 2014, p. 3).

The accelerated pace of technology development, the shrinking half-life of knowledge and their global scope and scale, and the global environmental concerns raise serious questions of the appropriate source of law. For example, is this still at the state level? (Teubner, 1997). Complementing this deliberation is the autopoetic perspective of the source of law, which suggests that the law should not be expected to frame the market and technology development through expectations (*ex ante*) but through dispute resolution (Kratochwil, 2014, p. 6), since situated and timely praxis and action are at center stage at this accelerated pace of development and shrinking half-life of knowledge, and not narrative expectations (Kratochwil, 2014; Orlikowski & Scott, 2014; Taleb 2014). If this is the case, then incomplete and asymmetric information, time, multiple players' wants and needs, expectations, and norms play a critical role in understanding the behavior of individuals and organizations (Kratochwil, 2014, pp. 41–43; p. 49; Taleb, 2014). Or, to move the discussion to a higher level of abstraction, how do we view humans?

Homo Sustainabiliticus

The present concept of law appears to be based on two models of humans: *homo politicus* and *homo economicus* (Brennan, 2008; Kratochwil, 2014, p. 50; Morgenthau, 1946). I would suggest to add another two: *homo technologicus* (Gingras, 2005; Longo, 2001) and *homo sustainabiliticus* (see Figure I.1). In the last model of humans proposed here, I advocate to include the three aspects of the triple bottom line (e.g., Blackburn, 2007): the economic profitability, the environmental concerns, and the social responsibilities, intertwined, emergent, and constrained by energy and information processing (cf. Zachary, 2014). The new human model of *homo sustainabiliticus* proposed here is a response to the monumental changes that human society is presently going through, resulting from, and responding to, technological revolutions, including social networks and internet of thinks (mobile communication, energy, logistics) plus climate change, energy limitations, and the creation of new industries and knowledge areas (nanotechnology and robotics, among others) (e.g., Rainie & Wellman, 2014; Rifkin 2014) ensuing in what is called gift economy (Cheal, 1988), grant economics (Boulding, 1981), collaborative commons (Rifkin, 2014), or sphere of reciprocity (Gershuny & Fisher, 2014), spaces where transactions are avoiding or minimizing direct monetary exchange and centering on social exchange (face to face and/or virtual) and sustainable development (Brundtland Commission, 1987;

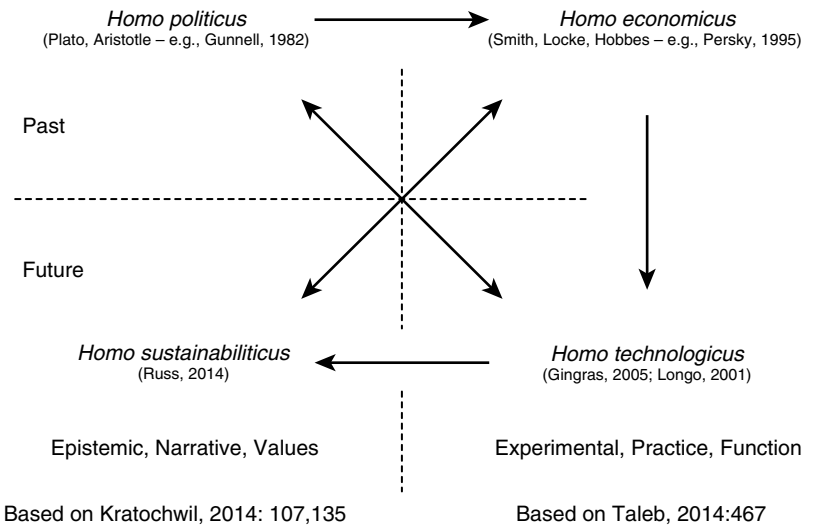

Figure I.1 Human models, framework, and development.

Seyfang & Longhurst, 2013). This perspective also presents an alternative to the strictly functional and practical (market driving and driven) perspective of *homo technologicus.* Both perspectives are building on the ensuing understanding of the growing importance of information as a critical building block of science (e.g., Deutsch & Marletto, 2014) and the related energy constraints (e.g., Landauer, 1996). In my opinion, what makes the perspective of *homo sustainabiliticus* different from *homo technologicus* are the self-organization and entropy considerations within the environmental constraints (similar, for example, to a living cell, see Davies, Rieper & Tuszynski, 2013; or activities, see Zachary, 2104).

The social exchange sphere is presently mostly driven by social norms, trust, transparence, and emergence (Orlikowski & Scott, 2014; Rifkin, 2014), focusing on access to (network), versus ownership of (market), sharing versus self-interest (Rifkin, 2014) and future versus present. One of the major weaknesses identified in the exchanges is the lack of pecuniary value (Rifkin, 2014, p. 17). The naïve assumption that a quasi-democratic, widely participatory system will always achieve effective goals in an efficient way is too high a risk. One need to understand that the limitations of individual's and collaborative collective's societal human decision making (Gigerenzer, 2014; Kahneman, 2011) that were so adequately described by Diamond (1997, 2005) could result in less than a sustainable society and ecology. Having an effective and efficient market (currency) mechanism as an integral part of

the social exchange sphere could increase the participations of the prosumers and overcome the limitations of peer-to-peer networks underwritten by social norms as well as the weaknesses of the present capital-only—based monetary system (e.g., Bellotti et al., 2014). For years I was concerned with the notion that economists only worry about efficient (but not effective) markets. Taking such assumptions as given (without even questioning them) is always a concern in any area of decision making, but especially here (e.g., Boulding, 1986; Kratochwil, 2014, p. 120; Taleb, 2014).

Recently, it became obvious that this is wrong. For example, research suggests that financial capital as a means to capture the value of opportunities vertically along the value-added chain (referenced in Rifkin, 2014, p. 47), together with labor, account for 14 percent of economic growth (Abramovitz, 1989, p. 133). The other 86 percent could be explained by energy (Ayres & Ayres, 2010, p. 14) and knowledge-human capital, which are presently not captured directly and explicitly by the market system.

We must also have an effective economic system, which, by definition, requires a political, social, and judicial discussion of the goals. The monetary, economic, and legal system that served so well during the industrial revolutions since the eighteen century needs to be modified (Piketty, 2014; Rickards, 2014; Rifkin, 2014) to overcome the weaknesses of the present economic and social system built on money as a contracted mode of exchange. Some of those shortcomings are short time of horizon and no constraints built-in regarding (1) human capacity for information processing, (2) energy, and (3) environment.

The "New Gold"

Such an effective system (market) must be able to learn and modify (Boulding, 1962) at a fast pace as well as be resilient (Kratochwil, 2014: 121) or what Taleb (2014) defined as "antifragile." Furthermore, such a system must be *global*, which should not prevent the existence of a large number of local complementary currency systems (e.g., Place & Bindewald, 2013; Seyfang & Longhurst, 2013), with an exchange rate (between the new currency and the local complementary currencies as well as the SDR, dollar, euro, etc.) that actually should contribute to the resiliency of such a system (Taleb, 2014) and reduce inequality (Bouchaud & Mézard, 2000). The currency to be used should be based on the "new gold," which I define here as usable and sharable, renewable *energy and knowledge* (negative Shannon entropy of information), replacing the "old gold," to stabilize the global monetary system (cf. Rickards, 2014, pp. 234–242). As such, the currency to be used should incorporate time (e.g., Boyle, 2014; Seyfang, 2006)

energy (e.g., Barr & Asanović, 2006; Taal, Drupsteen, Makkes, & Grosso, 2014), and information/communication *availability* and *constraints* (e.g., Ortega & Braun, 2012; Rodoplu & Meng, 2007; Woodford, 2014) to support the newly developing communication/energy matrix (see also discussion in Rifkin, 2014, pp. 24, 47, 55; Tribus & McIrvine, 1971). Such a complementary system and currency should be developed by the IMF broadly following the process proposed by Rickards, (2014, pp. 234–242).

Specifically, I postulate that:

> *New currency ("new gold") = Function of usable, renewable and sharable* ([*energy, change of energy, entropy of energy, change of entropy of energy*] *PLUS* [*information, change of information, entropy of information, change of entropy of information*]*;* [*Human life expectancy and quality*])

Such a system that builds on saving energy and including reusable energy sources in the currency could accelerate the adoption of such technologies (including "smart grid," which should allow for leveraging energy by organized data) by the United States and others. Those countries lag in their adoption in comparison to China and Europe (due to their progressive legislation, Rifkin, 2014, p. 83). As such, adopting such a system will accelerate the price reduction of renewable energy and information closer to "near zero" (Rifkin, 2014), and will improve quality and longevity of human life.

Some of the building blocks for such a currency and system are already in place—for example, transitioning from the fossil fuel–based economy to renewable energy sources while considering sustainable economic development as a constraint (e.g., Ayres & Ayres, 2010; Dincer & Rosen, 2007). There is a rich literature discussing the concepts of data and master data quality, quantity measurement, and management (e.g., Heinrich, Kaiser, Klier, 2007; Knolmayer, & Röthlin, 2006; Loshin, 2010; Otto, Hüner, & Österle, 2012; Wang & Strong, 1996) and their relationships with human cognitive processing and constraints (e.g., Buettner, 2013; Park, Kim, & Lim, 2001; Woodford, 2014). Another growing literature discusses the synthesis of energy and information (Tribus & McIrvine, 1971), measurement, management (e.g., Medhekar, Howard, Trappe, Zhang, & Wolniansky, 2008; Ortega & Braun, 2013), sustainability, resilience, and self-organization (e.g., Bell & Morse, 2013; Odum 1988; Redman, 2014), and entropy (Cook, 1984; Davies et al., 2013). What is desperately missing, as discussed earlier, is a broad multidisciplinary discussion and synthesis of all the subjects together, which is also the stated goal of this book. One would hope that the new currency and new legal paradigm of *homo sustainabiliticus* proposed here will accelerate such a process.

Human Capital

The preceding discussion reemphasizes the importance of knowledge, capital, and entropy. Consistent with that, I recently defined human capital as "the scope and amount of controlled negative entropy an entity possesses at any point in time, within a context (goals and constraints; economic, social, environmental), that can create (presently and potentially in the future) value for an exchange" (Russ, 2014, p. 22). The importance of human capital and assets, particularly, public- and company-specific education and training, which depends partially on "educational policies, access to training and to acquisition of skills, and associated institutions" (Rickards, 2014, p. 22) came into question recently (Pritchett, 2001; Wolf, 2002). For example, Rifkin (2014) reduces the value of human capital and increases the value of social capital, replacing knowledge creation with access to knowledge. Taleb (2014) diminishes the value of education and narrative/codified/scientific knowledge in favor of praxis, tacit knowledge, and an increased importance of decision-making skills in an asymmetric context. This would suggest that deliberating value creation and value reporting, which is the subject of this book, is a timely addition to such a discussion.

Book Framework and Chapters

This book extends contemporary literature by providing a stage for a broader discussion of human capital and assets theory building, and more critically, by inspiring a multidisciplinary synthesis between diverse disciplines, comparable to Itami and Numagami's "logical compound synthesis" (1992). The original call for chapters requested proposals from a multidisciplinary ensemble of scholars who could augment one or more of the following theoretical perspectives/disciplines: Economic, Economic Development, Financial, Accounting, Systems-Networks, Behavioral, Human Resources, and Social. Multilevel and multidiscipline theoretical breakthrough chapters were keenly encouraged. When suitable, a multiplicity of empirical methods from diverse disciplines that can augment the developing of a new universal theory of human capital and assets was also strongly fostered. The framework adopted for this book is consistent with Russ (2014), which framed the discussion of human capital and assets around the major issues grounded in the praxis of human capital and assets while presenting a triangulation opportunity to analyze these issues from diverse academic traditions, perspectives, and theories (see Figure I.2). The five issues identified earlier were definitions, origins; management; valuation, risk; value creation; and reporting, signaling. This book will focus on three of these issues: definitions, origins; value creation; and reporting, signaling. Each will be briefly discussed in the following paragraphs.

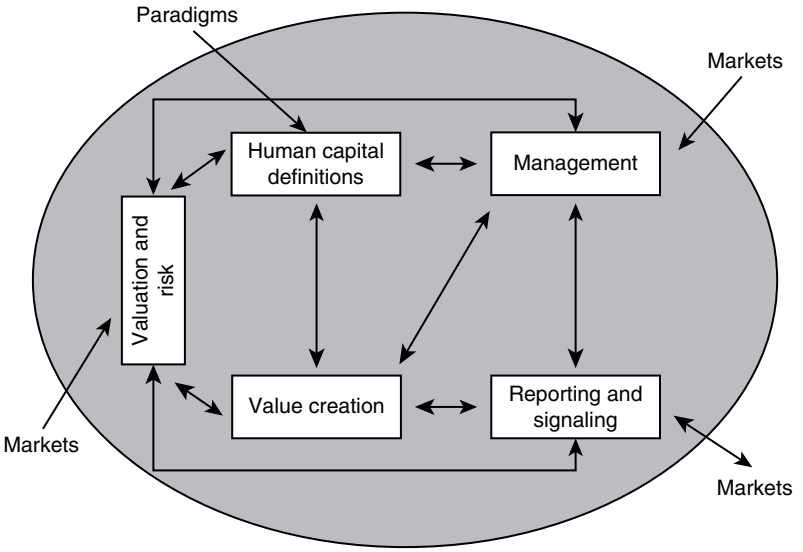

Figure I.2 Human capital: Major issues.

Definitions, Origins

There is no one accepted and shared definition for human capital (e.g., Mahroum, 2000; Gavious & Russ, 2009). Different academic traditions and perspectives have different definitions and use different methodologies for the study of human capital and assets (e.g., Becker, 1964; Romer, 1989; Lev & Schwartz, 1971; Wright, McMahan, & McWilliams, 1994; Snell & Dean, 1992; Coff & Kryscynski, 2011; Ployhart, Nyberg, Reilly, & Maltarich, 2013). To minimize confusion, for this book, I requested every author to be explicit about the definitions and the perspectives used in their chapter.

Value Creation

The scope of the value creation aspect of human capital concentrates on different qualities and attributes of organizational learning as a driver for value creation. Examples include internal and/or external processes of learning, exploitative and explorative practices, positioning in networks, and the use of social capital for learning and value creation purposes (e.g., Kang, Morris, & Snell, 2007; Lepak, Smith, & Taylor, 2007; Martín-de Castro, Delgado-Verde, Amores-Salvadó, & Navas-López, 2013).

Reporting, Signaling

The scope of the reporting, disclosure, and signaling aspect of human capital (as different from but complementary to valuation) deliberates on human capital attributes reported and their effects and trends (e.g., Abeysekera & Guthrie, 2004; Abhayawansa & Abeysekera, 2008; Gamerschlag & Möller, 2011; Lin, Huang, Du, & Lin, 2012); forces that support and hinder disclosure and the advantages and disadvantages of disclosure (e.g., Samudhram, Sivalingam, & Shanmugam, 2010); different platforms and channels used for reporting and disclosing human capital (e.g., Bozzolan, Favotto, & Ricceri, 2003; Cormier, Aerts, Ledoux, & Magnan, 2010; Kent & Zunker, 2013); and finally, the costs, benefits, and characteristics of human capital signaling, and the association of signaling with human capital reporting (e.g., Weiss, 1995; Lang & Siniver, 2011; Lee & Yoo, 2013).

Next, a brief overview of the chapters will be provided.

Part I—Value Creation

Chapter 1 proposes a new measurement methodology, the "human *potential* measurement," that goes beyond the existing measurement approaches of human capital that make use of financial and/or nonfinancial indicators. The model was developed and tested in Germany in 2009. The authors analyze a number of inhibiting and facilitating factors and the description of target behavior, as well as recommend the inclusion of a corporate sustainability management strategy as one aspect of the initiative. A roadmap for implementation, including a specific action plan, is also outlined in the chapter. The chapter insinuates potential new venues for the measurement of human capital as integrated into the company's comprehensive strategy and offers a detailed implementation approach for practitioners and new research areas for academics.

Chapter 2 presents a new dynamic model of continuous development of an organization's sustainable competitive advantage from the strategic, behavioral, and human resource perspectives. Based on the authors' literature review, their model proposes a joint evaluation of intellectual capital, human resources management, knowledge management, and organizational learning, resulting in what they define as the integrated evaluation loop (IEL), with a number of alternative complementary processes, which they define as multicomponent, flexible customization, integrated, and indicatorlizing. The major contribution of this chapter is its demonstration of how measurement with the appropriate framework and context can contribute to value creation with continuous development of the organization. This should be done, according to

the authors, by establishing a continuous loop of feedback-based learning and innovation. This proposed model can be used by academics to advance the research in this area and by practitioners to create and maintain a sustainable business advantage in today's global and continuously changing economy.

Chapter 3 presents insights from human capital and signaling theories perspectives to study the effect of different aspects of human capital on the founders of new ventures in attracting corporate partners and venture growth. Specifically, the authors study new technology–based ventures (NTBVs) and their alliances with large business groups in the Korean context. Both the direct effect of the human capital of the founder and the mediating role of the business group are studied. The study findings suggest that founders' previous work experience in a related industry and an output functional background are more influential in attracting external resources than their academic education background. The results also support the positive role of collaboration with large business groups in terms of the faster IPO of the NTBVs. The chapter is a worthy example of the use of two complementary theories to analyze a complex mediating model, with strategic and entrepreneurship implications within the dynamic context of emerging technologies and economies. The counterintuitive findings regarding the effective signaling mechanism used would suggest to academics and practitioners to look deeper into different factors of human capital, beyond formal education.

Chapter 4 reveals a conceptual multilevel, multitheory model of the interactive relationships between the two types of capital from the social and behavioral perspectives. The author presents the basic constructs and measures from both the individual and collective/group levels of analysis and examines their similarities, differences, and the forward and reverse linkages among the two capitals and the outcomes at both levels. This multilevel model has a number of implications for academics, suggested by the author, in advancing the micro-foundations and integrating the theories of human and social capital. For example, the conversion of human capital from the individual level to the unit level is not a simple accumulation due to the interaction with social capital. This chapter also provides a comprehensive understanding of the two theories and the interrelationships between the antecedents and consequences of human capital and social capital for practitioners, assisting them in creating productive settings and policies in their organizations. This chapter is a welcome contribution to a small but growing body of literature discussing human capital from a multitheory, multilevel perspective and provides academics with a better understanding of the complexities of the constructs and offers practical advice to organizational and team leaders for improving organizational and team effectiveness.

Part II—Reporting and Signaling

Chapter 5 applies social network analysis to economic and corporate finance theories of company value generation to examine the mechanism by which human capital pursued in managerial recruitment is driven by the business context from which it is attracted. Defining human capital as a transferrable asset, the authors capture simultaneously some of the economics and sociology of human capital valuation by utilizing exponential random graph models to examine executive migrations among large UK companies. The study finds executive management migrations related mainly to length of tenure, residual income added, particular industrial classifications, company value, cost–benefit per employee, and operating revenue to cost per employee, at the company of origin. Most interesting is the authors' findings that the company value of the originating firm is used by the recruiting company as a heuristic proxy of the value-adding capabilities of the recruited managers, which reflects an underlying social selection mechanism. This chapter is a worthy example of the application of a novel analysis from the systems-networks perspective, advancing our knowledge of the use of a social selection mechanism in recruitment, driven by an interfirm valuation process.

Chapter 6 presents a new model for company valuation including intangibles, and reporting standards regarding intangibles, from the accounting perspective. The authors review accounting literature regarding the identification, recognition, and disclosure of intangibles. This is followed by the review of the accounting perspective on standardization of social statements and performance indicators from the viewpoints of multiple stakeholders. The chapter recommends using integrated reporting, including specific items listed to be included in the report, in the notes to financial statements, as a possible solution to the failures identified by the authors' review. Following this discussion, the authors propose an improved model of a company valuation, based on tangible and intangible indicators, and provide an initial report of using this model for the banking industry in Italy. The chapter illustrates the importance of detailed reporting of intangibles and is a major contribution to the literature of company valuation incorporating such data.

Chapter 7 reveals insights from human capital disclosure literature and signaling theory to compare the reporting by Italian companies in their annual and sustainability reports by using the content analysis method. The chapter reports the findings of human capital disclosure regarding the signaler, the receiver, the signal, and the feedback. For example, the study findings show a high number of human capital signals in sustainability reports but not in annual reports. The information in sustainability reports seems to be

consistent with the human capital information that financial market agents use in their decision making; however, the reporting's low credibility is seen as an obstacle. This chapter is an important addition to the study of the disclosure of human capital as it suggests utilizing sustainability reports more intensively, both for practical and for academic purposes, and using the scheme described in this chapter offers tools and a fruitful area for future research.

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PART I

Value Creation

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CHAPTER 1

A Measurement Approach to Human Potential in the Context of a Sustainable Corporate Management

Regina Osranek and Klaus J. Zink

Introduction

The idea that the success of an organization is to a large degree determined by its employees and their engagement and performance is something that continues to be emphasized by scientific publications and lessons learned alike (e.g., Bonet, Armengot, & Martín, 2011, p. 79; Boudreau, 1996; Sims, 2002, p. 2). The expression "the human success factor" has become such a standard introduction that most readers will not think twice about its meaning. It is remarkable that this wording is not yet exploited and is still in use. Probably it is because its correctness can be assumed furthermore and because societal, ecological, and economic developments (so-called mega trends such as globalization, dynamics of markets, demographic development, change of values, technological progress, and urbanization, see Zink, 2010, p. 50; Zink, 2013, p. 38) continue to demand placing employees as key performers at the center of business processes.

Of course, many developments such as the demographic change or the shortage of skilled workers are not limited to particular countries, such as Germany (European Union, 2013). They even take place outside of Europe and demand the long-term construction and preservation of human resources or human capital, respectively (e.g., Bloom & Canning, 2004; Magnus, 2009)

The goal of retaining a company's future viability while developing human capital in the long term is part of the so-called sustainable corporate management. The normative requirements of sustainable corporate management demand that companies as key players contribute their share to society. In recent years, the companies have been increasingly held responsible for that. However, in order for those companies to be able to develop, retain, and promote human capital, they will have to be given appropriate instruments to work with.

Numerous approaches and actions in the context of occupational health promotion or life-phase–oriented human resource development as a promotional tool for employee retention are already in place. But it is to be assumed that the introductory phrase of the "human success factor" does not only stay in use because of its validity, but also because the search for conceptual solutions will remain ongoing for some time to come.

A systematic, holistic approach to the implementation of this goal (obtaining corporate sustainability and establishing human capital in the long term) can be brought about by management tools that include the measuring and managing of human capital.

This requires a clear understanding of the term "human capital," which will be dealt in the next section. After the definition of human capital, the chapter will explain why it is important to extend the approach to human capital to a broader understanding (according to human *potential*). This extension provides the basis for an appropriate measurement, which will be stated later. The implementation of a measurement approach into existing management structures of an organization can be understood as a challenge, the approach of a corporate sustainability management can support this process. This will be part of further explanations at the end of this chapter.

Human Potential Instead of Corporate Human Capital

The term "human capital" has been defined and described numerous times within the literature of the economic field (see Barney, 2011; Becker, 1964; Becker, 2008; Mincer, 1993; Hatch & Dyer, 2004; Johnson, 2005; Schultz, 1961; Stewart, 1997). When looking at the various definitions, three components of those definitions can be identified (Osranek & Zink, 2013, pp. 107–108):

1. "Human capital refers to all individual social, professional and methodical skills in an organization.
2. This HC is specified by integrating the relationship between individual skills and organizational objectives as such they have to be useful or valuable for the organization. [. . .]

3. Measurement of the organizational context conditions and their adequacy to facilitate the use of individual skills for the organization (including the individual parameters outlined above)."

Looking at the existing approaches to measuring human capital (HC) in organizations, it becomes clear that those generally are a pure measurement of result-based variables—for example, Skandia Navigator by Leif Edvinsson (Edvinsson & Malone, 1998), CELEMI Intangible Assets Monitor by Karl Erik Sveiby (Sveiby, 2001), Saarbruecken formula by Christian Scholz and colleagues (Scholz, Stein, & Bechtel, 2011), Workonomics and Real Asset Value Enhancer by Boston Consulting Group (Strack & Villis, 2002), Intellectual Capital Statement by The Danish Agency for Trade and Industry (Danish Agency for Trade and Industry, 2000). Most of the existing measurement approaches fall short when organizations look to them for directly derived suggestions for the long-term implementation and promotion of human capital. This is because most evaluation tools concentrate on result-based variables and neglect the promotional conditions that make the generating of human capital possible. Only a few measurement approaches take these conditions into account. This, for example, applies to a small degree and in the form of value drivers to the approach by Wucknitz (2009, p. 62 f., translated by the authors):

1. Organizational environment
2. Organizational structure
3. Team processes
4. Leadership
5. Human Resource Management
6. Personnel Legal Structure (workforce-related law)
7. Personnel Finance Structure (personnel expenses)
8. Personnel Organizational Structure (structure of the workforce)
9. Key Employees
10. Corporate Culture

One approach that incorporates the conditions favorable for human capital much more broadly is the so-called human potential index (HPI).

With respect to this broader view, it becomes necessary to replace the measurement of human capital with that of a so-called human *potential* (HP) measurement such as the HPI (Große-Jäger, Friedrichs, & Schubert, 2009) conceived in Germany. Besides the result-based variables, the human potential measurement also gathers data concerning the conditions that makes the generating of human capital possible.

In addition to the general conditions that arise from the organization itself (sector, company size, legal form as general conditions), special emphasis is placed on those conditions that exert an influence through value drivers. These value drivers are being grouped into value-adding processes and instruments of sustainability. The value-adding processes include HR strategy and management, planning and selection, compensation and benefits, leadership, communication and information, HR development, and change management. The instruments of sustainability refer to the following topics: corporate values, workplace responsibility, demography, work–life balance, employee retention, equal opportunities and diversity, and health promotion. Result-based variables for economic success (as indicated by the balance sheet: EBIT qualified by turnover, specific evaluation by the management) or employee-oriented factors such as indicators of commitment (motivation, employee retention, innovations) reflect the degree of human potential in the form of indicators and, in so doing, they are result-based variables of human potential (Große-Jäger, Friederichs and Schubert, 2009, p. 22).

Given that the extent of the result-based variables is largely determined by the value drivers, management can now be given clear topics to pursue in order to facilitate human potential: for example, compensation and benefits, personnel development, leadership, work–life balance, employee retention, or health promotion.

Besides the breadth of the approach, it is also noteworthy that the model is not solely founded on the evaluation by management; but, as part of the "indicators of commitment," it also takes into account the evaluation of employees (indicators of commitment). In addition, almost no other measurement approach of HC integrates such a range of employee factors including workplace responsibility, work–life balance, employee retention, equal opportunities, diversity, health promotion, and demography.

The model was developed and tested in practice by the Federal Ministry of Labour and Social Affairs and representatives of science and practice (i.e., Human Capital Club e.V.) in 2009. The objective was to identify the human capital of companies on the basis of the indicator model described earlier, to evaluate and gather suggestions for the improvement of the value drivers. Until the present moment, the model is not being promoted further—perhaps because of political reasons (a change of the political party in government and ministry) or because of the criticism the model faced. One of the most serious points of criticism is the fact that up until now the causal connection between the value drivers and the result variables is not yet verified. Undoubtedly, the merit of HPI lies therein that it integrates the significance of organizational and employee-orientated goals with a short- and long-term outlooks in a model meant to generate human capital.

Extending the measurement approach from an exclusive collection of result-based variables toward the integration of potential framework conditions is a first step to adequate measurement of human capital. The corresponding framework model is made apparent by the following chart:

Crucial to the described integrative framework (figure 1.1) is the consideration of corporate sustainability. Generating and promoting human potential should be adjusted with corporate sustainability strategy because corporate sustainability can be understood as a prior concept that is able to develop human potential in the long term. The link will be explained later.

Possible criteria that can be seen as relevant for generating human potential are listed in table 1.1.

This extension is not sufficient when it comes to concrete recommendations for the preservation or construction of HC, however. The measurement approach also has to be augmented by a second level: the measurement of target behavior that shows how an organization can reach the desired result-based variables. Measuring behavior means defining target behavior and showing the path to achieving it. According to various companies, this path can look different. For example, if the existence of strategy-promoting competencies within the company is part of the HC measurement, then it is merely a result variable. It does not explain if suitable organizational conditions are in place or which individual behavior and by whom is needed to reach a high manifestation of this result variable. On the contrary, if this result variable shows a low value, an organization will have to adjust the corrective measures depending on whether the low value was a result of management negligence (e.g., an inadequate search for personnel) or deficiencies on part of the employees, such as a low willingness for self-improvement. Only then can the assertions of the result variables be interpreted and managed correctly.

A general approach concerning the measurement of human potential as intended here does not limit itself to establishing the HP-promoting criteria, the aimed-for status per criterion ("result variable") and the measurement in and of itself (status quo). Instead, this initial phase is followed by an analysis of the status quo in regard to promoting and inhibiting factors, the identification of the required framework and description of the target-orientated behavior and "behavior carrier." Analysis of the status quo is meant to show how the respective target values have been exceeded or have fallen short (or could be kept that way). In doing so, it provides hints to effective measures to reach or retain the target values. With regard to these different analytical elements, concrete behavioral patterns that individuals or entities ought to display in order to facilitate or support target value achievement can be described.

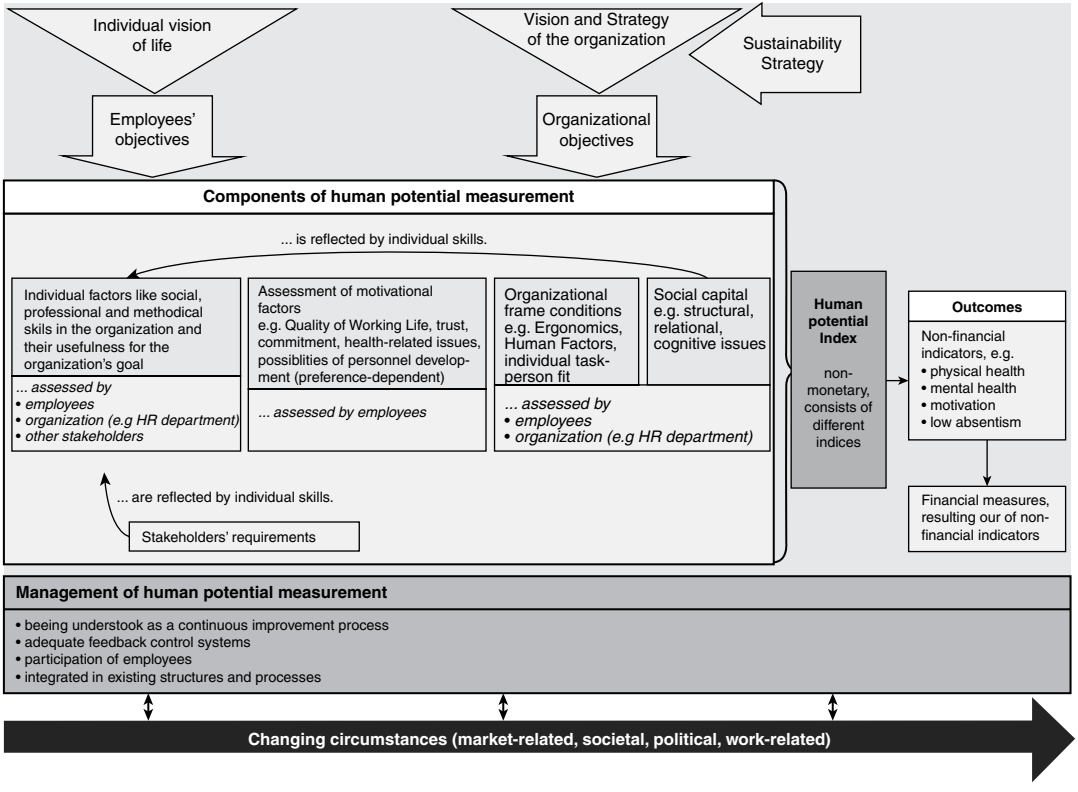

Figure 1.1 An integrative measurement framework of human potential (*Source*: Osranek & Zink, 2013, p. 18).

Table 1.1 Possible criteria of human potential

Topics	*HP-related criterion*	*… assessed by*
Individual (skills) factors	assessment of social skills and their usefulness for the organization's goal	• *employees*
	assessment of professional and their usefulness for the organization's goal	• organization (e.g., HR department)
	assessment of methodical skills and their usefulness for the organization's goal	• other stakeholders (e.g., by customers)
	Skills of sustainability thinking and acting - *responsible use of resources* - *capacity for reflection / critical thinking / forward-thinking* - *innovative thinking* - *stakeholder-oriented thinking and acting*	
Motivational factors	**Quality of Working Life** (following Easton and van Laar 2012) - *General Well-being* - *Home–Work Interface* - *Job career satisfaction* - *Control at work* - *Working conditions* - *Stress at work* - *Opportunities to participation and involvement* - *Life span-oriented personnel policy* - *Reward systems* - *Individual task–person fit*	• *employees*

Continued

Table 1.1 Continued

Topics	*HP-related criterion*	*. . . assessed by*
	Organizational trust	
	- *credibility*	
	- *reliability*	
	- *perceived fairness*	
	- *honesty and integrity*	
	- *competency*	
	Organizational commitment and organizational identification	
	Health-related issues	
	- *physical well-being*	
	- *psychological well-being*	
	- *coping strategies*	
	- *psychological resilience*	
	Possibilities of personnel development	
	- *amount of training measures per employee*	
	- *transferability of course contents into daily routine (usability)*	
	- *employees' satisfaction with courses*	
	- *consideration of employees' needs regarding personnel development*	
	- *usability of different teaching and learning methods (e.g., e-learning)*	

Organizational frame conditions	**Management of health** - *risk assessment / safety-related assessment* - *compliance of ergonomic standards* - *healthcare offerings (demand-related) (physical and mental health)* - *corporate health management* **Management of skills and knowledge** - *demand-related planning of education and further training (middle-term and long-term)* - *systematic documentation (e.g., skills profile and job profile)* - *evaluation of usefulness* - *evaluation of quality of education/ further training* - *knowledge management* **Career management/ talent management (for young and older employees)** - *rate of vocational training* - *quality of vocational training* - *general career management* - *individual career planning*	• *organization (e.g., HR department)*

Continued

Table 1.1 Continued

Topics	*HP-related criterion*	***…assessed by***
	Financial capital for ensuring HP-related activities **Ethnical and age-related diversity**	
	Human Factors - *Work satisfaction* - *further human factors can be found in other HP-related criteria*	• *employees*
Social capital *(following Riemer 2005, p. 129)*	**Structural issues** - *based on social relationships* - *based on networks*	• *employees*
	Relational issues - *interpersonal trust* - *norms* - *expectations* - *identification and identity*	
	Cognitive issues - *shared language and codes* - *shared knowledge* - *shared mental models* - *group memory and social skills*	

The aforementioned approach is exemplified in table 1.2.

In table 1.2, the outlined status quo is always lower than the aimed target status. Conversely, relevant decision makers have to prove if any investments can be reduced. Therefore, the perception of stakeholders, especially of employees, could be a crucial decisive factor if savings or any investment-stops are worth their price.

Tables 1.1 and 1.2 suggest the time and effort needed to measure and manage and therefore different data sources must be used. These efforts can be reduced by using several less-extensive measurements such as data collected in the context of employee surveys (e.g., every two years), existing HR-related and financial statistics, and evaluation of measures (e.g., training courses) and of ratings of employees by managers during appraisal interviews (e.g., regarding skills). This division of HP measurement also suggests the necessity of having all data consolidated into one electronic system. In addition to a divided measurement, the feasibility can be further enhanced if core indicators are defined, which can be extended by additional indicators (incidental indicator).

At this point, it would be desirable to know which of these criteria could be a core indicator. But without knowing the existing corporate strategy, a binding determination of core indicators would be premature. For instance, if the criterion "ethnical and age-related diversity" can be defined as an incidental indicator and if this issue is an important part of a strategy of an international company, it has to be understood as a core indicator and it must be a mandatory part of the HP measurement.

For better practicability, the measurement process can be coordinated by a designated team comprising members of top management, HR agents, and other representatives. The team bundles all relevant data and manages meetings or conferences for discussing data, identifying the facilitating or inhibiting factors, framing conditions, describing objective-related behavior, and designing objective-related measures. For several meetings, it is possible to focus on specific topics such as health management or personnel development. In addition, the responsible team has the task to prove the relevance of different HP-related criteria. Tables 1.1 and 1.2 are just recommendations. Each company has to determine its suitable indicators and relevant numbers. Periodically, it has to be proved if the chosen criteria are still valid because any changes in organizational workforce or societal and technical developments entail new requirements related to human potential and its promotion.

In the case of a large company, every department has to deal with the measurement on its own in the course of annual strategy meetings. Moreover, section-specific assessments of individual employee skills can only be done

Table 1.2 Demonstration of a possible assessment of human potential, based on the example of the criterion "possibilities of personnel development"

HP-related criteria	*Target status* (exemplary!)	*Status quo (measurement)* (exemplary!)	*Facilitating / inhibiting factors*	*Required frame conditions*	*Objective-related behavior and "behavior carrier"*
possibilities of personnel development					
amount of measures per employee	Two work-related training measures per employee	60% of employees participated in one course within 5 years	- Inhibiting: no appraisal interviews take place, therefore, no opportunity to determine adequate measures per employee - facilitating: most of the employees are interested in personnel development	- A common understanding of the concept 'appraisal interviews' - Managers need time to conduct appraisal interviews	- *Top and Middle Management*: developing a concept how to conduct appraisal interviews - *Middle Management*: conducting appraisal interviews and using them for determination of individual measures - *Top and Middle Management*: developing a project plan according to conduct of appraisal interviews - *Employees*: planning and attending courses autonomously

	transferability of course contents into daily routine (usability)	Minimum value of usability for 80% of courses, assessed by course participants in the context of course evaluation (e.g., assessed by means of a rating scale from zero to five)	Evaluation of courses shows that 50% of courses fall short of the minimum value of usability	- Inhibiting: budget is limited - facilitating: employees dare to give feedback and make suggestions for improvement	- sufficient budget - Knowledge about required changes	- *Top and Middle Management/ HR department*: proofing alternative possibilities of personnel development and financing - *Employees*: giving feedback in the context of course evaluation - *HR department*: integrating employees' course feedback into the course planning
	employees' satisfaction with courses	Minimum average (!) value of satisfaction for all of courses (within a range of tolerance), assessed by course participants in the context of course evaluation (e.g., assessed by means of a rating scale from zero to five)	Evaluation of courses shows that the average of all courses fall short of the tolerance range	- Inhibiting: budget is limited - Facilitating: employees dare to give feedback and make suggestions for improvement	- sufficient budget - Knowledge about required changes	- *Top and Middle Management/ HR department*: proofing alternative possibilities of personnel development and financing - *Employees*: giving feedback in the context of course evaluation - *HR department*: integrating employees' course feedback into the course planning

Continued

Table 1.2 Continued

HP-related criteria	*Target status* (exemplary!)	*Status quo (measurement)* (exemplary!)	*Facilitating / inhibiting factors*	*Required frame conditions*	*Objective-related behavior and "behavior carrier"*
	Minimum average value (within a range of tolerance) according to employees' rating on degree of possible personnel development (e.g., assessed in the context of employee survey)	Assessed average value fall short of the tolerance range	- Inhibiting: different individual expectations on personnel development - Facilitating: More customized distribution of financial resources depending on employees' interests in training	- Knowledge about employees' concerns and interests - Knowledge about different possibilities how to meet employees' concerns	- *Middle management:* conducting appraisal interviews and using them to discuss employees' concerns and interests of personnel development - *Middle and top management*: identifying different possibilities and limits how to meet employees' concerns, informing employees' about these possibilities and limits - *Employees*: proofing the own concerns and interests according to their work-relatedness, communicating the own concerns and interests

usability of different teaching and learning methods (e.g., e-learning)	Minimum average value (within a range of tolerance) according to employees' rating on sufficient offer of different and effective teaching and learning methods (e.g., assessed in the context of employee survey)	Assessed average value fall short of the tolerance range	- Inhibiting: budget is limited; some of modern methods of teaching and learning overstrain older employees; electronic equipment is antiquated - Facilitating: different methods of teaching and learning are available (no expenses necessary)	- sufficient budget - different methods of teaching and learning - available equipment has to be suitable to modern methods of teaching and learning - Employees should to be able to use them - different methods of teaching and learning have to be applicable by different employees	- *Top management*: initiating the purchase of modern equipment in a feasible way - *HR department/ top management*: initiating the use of different learning and teaching methods - *HR department*: planning employee trainings in using modern, IT-supported methods of learning and teaching

by the respective line manager and should be periodically integrated into human potential measurement process.

Describing behavior designed to promote human potential without using a normative basis is not very effective. A "normative basis" implies the availability of a description or a concept outlining in which shape and direction this behavior is meant to develop. This concept in turn must be congruent with the short-, middle-, and long-term goals of the organization and the values by which it wants to abide.

The description of individual, desired behavior without the orientation on targets and ideals can be counter-productive and might, in the worst case, even jeopardize the company's future viability. So when describing target behavior, the idea of sustainable corporate management ought to be reflected upon. The sustainability management approach or that of the sustainable corporate management takes a more far-reaching view of human capital and can generate ideas to ensure the long-term fostering of human potential.

Human Potential as Part of a Sustainable Corporate Management

The link between human capital and sustainability arises from the definition of sustainability. Originally, it was not used in an organizational context, but rather in a global sense referring to the preservation of mankind. Accordingly, it is one of the fundamental ideas of sustainability that the individual should act to the benefit of all of humanity. McElroy and van Engelen (2012 p.37) write, for example:

> *Sustainability is the subject of a social science or management discipline that measures and/or manages the impacts of human activities on the carrying capacities of vital capitals in the world, relative to standards or norms for what such capacities need to be in order to ensure human well-being.*

This description fits with one of the first and most important definitions of the term, declared by the United Nations in 1987 (1987, p. 54):

> *Sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs (…) Development involves a progressive transformation of economy and society. A development path that is sustainable in a physical sense could theoretically be pursued even in a rigid social and political setting. But physical sustainability cannot be secured unless development policies pay attention to such*

> *considerations as changes in access to resources and in the distribution of costs and benefits. Even the narrow notion of physical sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity within each generation*. (United Nations, 1987, p. 54)

Presuming that the behavior of people takes place within organizations as well and transferring the normative requirements of sustainability (as the shortened form of sustainable development)to these organizations, one can deduce that the well-being of each employee is to be ensured—not just in a physical sense, but also in regard to the financial and social well-being.

Ultimately, human potential measurement can take place outside of the corporate sustainability framework. The question then is of the intention of measurement. Human potential can, for example, be measured with the intent of keeping the investment in human resources as low as possible or of controlling the cost–benefit ratio, respectively. Incidental personnel costs constitute the largest part of corporate personnel expenses and those for personnel development and health promotion can quickly rise significantly. These investments could be reviewed and kept low by using pursuant measurements. When following the idea of corporate sustainability, the overriding goals will not be keeping the costs in connection with human resources low and avoiding seemingly needless expenses, rather, there should be a concern to keep HR investments as high as possible in a monetary responsible way.

Taking a sustainability-based corporate principle that is firmly anchored in the concept of sustainable corporate management as a given, asking how a company can implement sustainable management in the existing management processes is worthwhile. In an attempt to define sustainable corporate management, oftentimes the following definition of corporate management according to Dyllick and Hockerts (2002, p.131) is used as a starting point:

> meeting the needs of a firm's direct and indirect stakeholders (shareholders, employees, clients, pressure groups, communities, etc.), without compromising its ability to meet the needs of future stakeholders as well.

It is assumed that the addition of the term "management" pertains to planning, implementation, and control of corporate sustainability (following Fayol's (1954) functions of management).

In this sense, McElroy and van Engelen (2012, p.1) describe corporate sustainability management as "the one thing it was intended to do, which is make it possible for organizations to measure, manage and report their

sustainability performance in a rigorous way." Independent of the various approaches to definitions concerning corporate sustainability that have arisen since then (for an overview, see Ehnert, Wes, & Zink, 2013; Christofi, Christofi, & Sisaye, 2012; Salzmann, 2005), Ehnert (2009, p.38) emphasizes that each organization has to find its own definition approach, which in turn should be shared by stakeholders, including the organization's own employees. However, it must be pointed out that, in practice, it is probably more promising to meet as many stakeholders' interests as possible.

Sustainability management is the planned systematic integration of the normative requirements of sustainable development in regard to its three dimensions—the social, economic, and ecological one—into all short-, middle-, and long-term decision-making processes. At the same time, all short-, middle-, and long-term interests of the organization's stakeholders shall be considered A corporate strategy that includes the concept of sustainability is a prerequisite. According to Mullins, Walker, and Boyd (2008, p. 2/12), "a strategy is a fundamental pattern of present and planned objectives, resource deployments, and interactions of an organization with stakeholders and environmental factors." To them, employees are primary stakeholders. Thus, their interests and concerns ought to be part of the strategy as well.

There seem to be two distinct ways of implementing sustainable corporate management: One consists of approaches that focus on the organization internally (corporate values, vision, and behavior) and the other comprises approaches that take a more external view (concerning stakeholder issues). Asif, Searcy, Zutshi, and Fisscher (2013, p. 9) integrate both perspectives by formulating an integrative management system for implementing sustainable corporate management.

Zink (2008) edited a book on the link between corporate sustainability and management approaches in the context of Human Factors, Total Quality Management, and Business Excellence. It illustrates that thorough comprehension of sustainability must be founded on an integrative approach (Zink, Steimle, & Fischer, 2008, p.15). Isolated management concepts such as the introduction of an environmental management system, sustainable product design, or social engagement are insufficient.

Hahn (2013) tried to answer to what extent ISO 26000 can serve to help organizations with strategic implementation of the guiding principle of sustainability. His contribution outlines a general introduction to sustainable corporate management and points to the formulation of an action plan that is helpful in substantiating abstract concepts (p. 445). The recommendation for an action plan obviously indicates the necessity to get an imagination of a target and to describe a target-related behavior. This seems to

be a prerequisite for realizing the rather abstract idea of sustainability. The so-called codes of conduct serve the same purpose (cf. OECD Principles for Multinational Enterprises, OECD 2013; ILO Tripartite Declaration of Principles, International Labour Organization 2006; Principles of the United Nations Global Compact, United Nations Global Compact Office, 2014). In addition to principles, there also exist well-established CSR standards like AccountAbility 1000 (AA 1000, The Institute of Social and Ethical Accountability, 2008) and Social Accountability 8000 (SA 8000, Social Accountability International, 2008). Standards go beyond the intention of principles because their compliance can be proved.

Sustainable Human Resource Management as a further development of traditional HRM is meant to support corporate sustainability management in regard to the realization of social, economic, and ecological sustainability. Ehnert (2009, p. 74) defines a sustainable HRM as "the pattern of planned or emerging human resource strategies and practices intended to enable organizational goal achievement while simultaneously reproducing the HR base over a long-lasting calendar time and controlling for self-induced side and feedback effects of HR systems on the HR base and thus on the company itself."

Sustainable HRM is able to support corporate sustainability management in three general ways:

1. HRM as "**enabler**": HRM supplies every person within the organization with sustainability-relevant competencies and ensures the initiation and development of these competencies (e.g., through the selection and development of employees).
2. HRM as "**realizer**": HRM implements sustainability-relevant concepts pertaining to the sustainability strategy such as planning and directing of an adequate long-term personnel policy, particularly in consideration of societal changes such as the demographic change.
3. HRM as "**affected party**": the "department" of HRM must take care to operate under sustainable aspects itself, for example, incorporating economically and ecologically sustainable aspects when planning internal activities such as occupational training courses.

To know the sustainability measures, sustainable management ought to be able to orientate itself on a corporate or sustainability strategy. Mariappanadar (2003) defines sustainable human resources management as "management of human resources to meet the optimal needs of the company and community of the present without compromising the ability to meet the needs of the future" (p. 910).

Relevant definitions of sustainable human resource management show that the implementation and development of human resources as a basis of human capital and simultaneously the consideration of stakeholder interests (short, middle, and long term) are the ultimate objectives of sustainable HRM (Ehnert, 2009). This should benefit not only the organization, but also all of its stakeholders and thereby also the employees. It clearly shows that sustainable HRM in itself contains the purpose of preserving human potential and even building it up. Therefore, HP can be a measurement variable that shows how successful the implementation of sustainability within the company is; namely, according to the three perspectives of HRM as enabler, realizer, and affected party:

1. In the case of HRM as "**enabler**": Are all personnel equipped with the relevant competencies to support the sustainability strategy?
2. In the case of HRM as "**realizer**": Are the sustainability-related concepts showing an effect? Is, for example, an adequate age structure or diversity present within the organization? Do the activities of the HRM support the strategy of sustainability?
3. In the case of HRM as "**affected party**": The department of HRM together with its employees and activities is itself a part of the human potential—does it abide by the guidelines of sustainable management?

Ultimately, four distinct ways can be defined on how sustainability is strategically positioned within companies.

1. Sustainable human resource strategy
2. Part of the general corporate strategy attends to the topic of sustainability
3. A sustainability strategy concurrent with other strategies
4. General corporate strategy that incorporates the approach of sustainability entirely

The most marked differences between these four ways are explained by their universality. Partial strategies that postulate the build-up of human potential can be counteracted by other strategies, particularly, in regard to human potential and sustainability. Even if a sustainable human resources strategy is in place for all departments of the company it could still be in conflict with other strategies that exist simultaneously. Consequently, a potential HP measurement could lead to contradictory results, depending on the dominant strategy.

This also means that the sustainability strategy must state how the human potential and its framework are designed. In this context, the crucial point is asking (and answering) the question if a strategy reflects the corporate understanding of sustainability. This reflection reveals more concrete possibilities of how to create human potential. Hahn (2013, p. 444) expanded this thought by describing how to integrate corporate sustainability into strategic management. The corporate strategy ought to comply with internal and external expectations. Before drafting and implementing a strategy, its fit to corporate sustainability and internal and external demands should be proved.

Sustainable Corporate Strategy as the Initial Point for Measuring Human Potential

To be able to speak of "human potential" (see definition of human capital, Osranek & Zink, 2013) and to facilitate sustainable corporate management, the important factor is the "fit" between the human potential and the sustainability strategy of the organization.

One of many (!) excellent examples can be given by a German automobile manufacturer. It demonstrates the alignment of HR indicators with a vision of the future and a corresponding corporate sustainable strategy. The sustainable strategy consists of superior topics like carbon dioxide emissions, electromobility, mobility patterns, renewable energy, resource consumption, preparing for the future, leaderships, and diversity (BMW Group, 2013, p. 15); for example, in the context of HR, the subsequent explanations focus on diversity, which is defined as follows:

> Diversity is part of a company's social responsibility for its employees, and therefore an essential part of the BMW Group's sustainability strategy, and an important contributor to the implementation of its corporate strategy. [...]
>
> Through a diverse workforce we aim to gain the knowledge we need to best serve our existing markets and develop new markets. Furthermore we preserve the performance of the company within a changing labour market scenario (for example demographic change and changing values).
>
> At the BMW Group, 'Diversity' refers to a holistic concept for handling diversity among people in the company: uniqueness and individuality of employees are important values and contain potential for the individual employee as well as for the company as a whole.
>
> Considering the increasing shortage of skilled workers and the need to serve our existing markets and develop new markets, a workforce with a good mix of ages and cultures is becoming more and more important,

> as is appropriate representation of women within the company, in leadership positions and in young talent programmes. (http://www.bmwgroup.com/bmwgroup_prod/e/0 _0_www_bmwgroup_ com/verantwortung/mitarbeiter_neu/vielfalt.html, February 13, 2014)

Every strategy has to be transferred into specific activities. In the case of "diversity," the company has specified three fields of action:

> Our focus on the three areas of age/ experience, cultural background and appropriate representation of women, lays the foundation for preserving and expanding the company's performance capabilities. We also promote diversity within the workforce through the topic "Work-life Balance", as well as promoting the integration of people with disabilities. [...] (http://www.bmwgroup.com/bmwgroup_prod/e/ 0_0_www_bmwgroup_com/verantwortung/mitarbeiter_neu/vielfalt.html, February 13, 2014)

After identifying relevant fields of action, the common way is to determine suitable indicators and define appropriate target figures. In the present case, the company has described its procedure during the earlier reporting period as follows:

> In November 2010, the Board of Management approved target ranges for gender for the BMW Group and the BMW AG for the whole workforce, management positions, young talent programmes and apprentices. These target ranges will be integrated into the corporate target system by 2012. The Board of Management approved the diversity concept in line with the recommendation of the German Corporate Governance Codex to strive for appropriate consideration of women for leadership positions. Targets for the areas age/ experience and cultural background will also be defined in detail and adopted.[...]. (http://www.bmwgroup.com/bmwgroup _prod/e/0_0_www_bmwgroup_com/verantwortung/mitarbeiter_neu/vielfalt.html, 13. Feb. 2014)

Even though not all indicators and target figures (or ranges) are visible to the public, some of these numbers can be shown here, reported in the last accessible sustainability report of 2012 (BMW Group, 2013, p. 97 f.):

- share of women in our workforce (to make up 15 percent to 17 percent of our workforce by 2020, both in the general workforce and in management positions within the whole organization.)
- employees from over several countries

- encouraging girls' interest who are still at school in the technical professions (no indicators published)
- women in both academic young talent programs and vocational training programs (grew to over 30 percent during the reporting period; Group Graduate program: 35.9 percent, Management Associates program: 40.0 percent).
- recruiting more new employees in organizations' growth markets and thus increasing the cultural diversity of the workforce, increasing the number of non-German senior managers in the long term, or engaging more senior managers with experience of working abroad.
- increasing staff exchanges with companies abroad and recruiting more employees from other countries.
- promoting diversity according to suppliers (no indicators published)

The following indicators are best practices of how to consider promotional conditions of diversity. Otherwise, diversity would not have been successful (BMW Group, 2013, p. 97):

- incidents of discrimination were logged during the reporting period
- no human rights violations were ascertained during the reporting period

It would not be enough to employ people with different nationalities. The company is rather supposed to cope with the upcoming implications and side effects, which is a prerequisite for generating human potential.

In view of the requirements of implementing corporate sustainability and its link to human potential, a "roadmap" can be suggested for continuing measurement of human potential (similar to Dunphy, Griffiths, & Benn, 2012, p. 234). The invitation of management to internal and external stakeholders for discussing ideas and objectives can strengthen the confidence and engagement in achieving objectives. A discussion about relevant issues could take place in workshops or large group conferences. At the same time, this kind of participation needs an appropriate corporate culture. Not only managers have to be willing to ask for employees' opinions and have to really try to take them into account, but also employees should dare to express their thoughts. The basis for all of these issues is an open communication with respect to made (and also pending!) decisions.

Conclusion

At the beginning of this chapter, a discussion of the term human capital and possible measurement approaches resulted in a suggestion of an extended

measurement approach that intends to measure human *potential*. On the one hand, the extension arises from the necessary integration of frame conditions that can promote human capital. On the other hand, the assessment of pure target numbers has to be completed by the analysis of inhibiting and facilitating factors and the description of target behavior as well. Only in this way expedient measures can be deduced. A suggested measurement process (roadmap) was embedded into the approach to corporate sustainability. The link between HP and corporate sustainability comes from the shared intention of both concepts. A corporate sustainability management has the aim to generate and promote human potential.

The suggested procedure entails several challenges that are related to the high effort of the process and its participatory approach, especially during the first phase with its aim to determine HP-related criteria, the participation of stakeholders and employees should be considered. Even if a high degree of participation can cause the risk of disappointed stakeholders, the majority of stakeholders will appreciate serious "openness" offered by management. This can result in high commitment and engagement of employees. However, transparent communication of the process as a prerequisite should be ensured.

Furthermore, the analysis of facilitating or inhibiting factors, required frame conditions, and objective-related behavior seems to be very time consuming and complex, but it can also increase the effectiveness of HP-promoting measures.

Certainly, the suggested measurement process is not always as duplicated as described here. Depending on company size and business experience, some parts of the process need different expenditure of time. For instance, verbalization of a corporate strategy seems to be routine for large enterprises with strategic management. However, for small companies, this cannot be taken for granted. Furthermore, large enterprises with separate HR sections or even sustainability departments have the manpower to manage such a complex process more rapidly. In the case of smaller companies, they can exploit the advantage of being a small organization and pass the process more quickly. But it would make sense to designate a process owner and HR agent(s) even if this has not been a routine so far.

Apart from the challenges for practice, additional need for action opens up for research: the presented approach offers a theoretical contribution in the form of a concrete suggestion as to how human capital can be generated, namely, by its operationalization. This entails the transformation of human capital–promoting indicators into concrete behavior and the link-up with a corporate sustainability strategy. Consequently, it must also be seen as an approach to operationalize corporate sustainability. Previous approaches

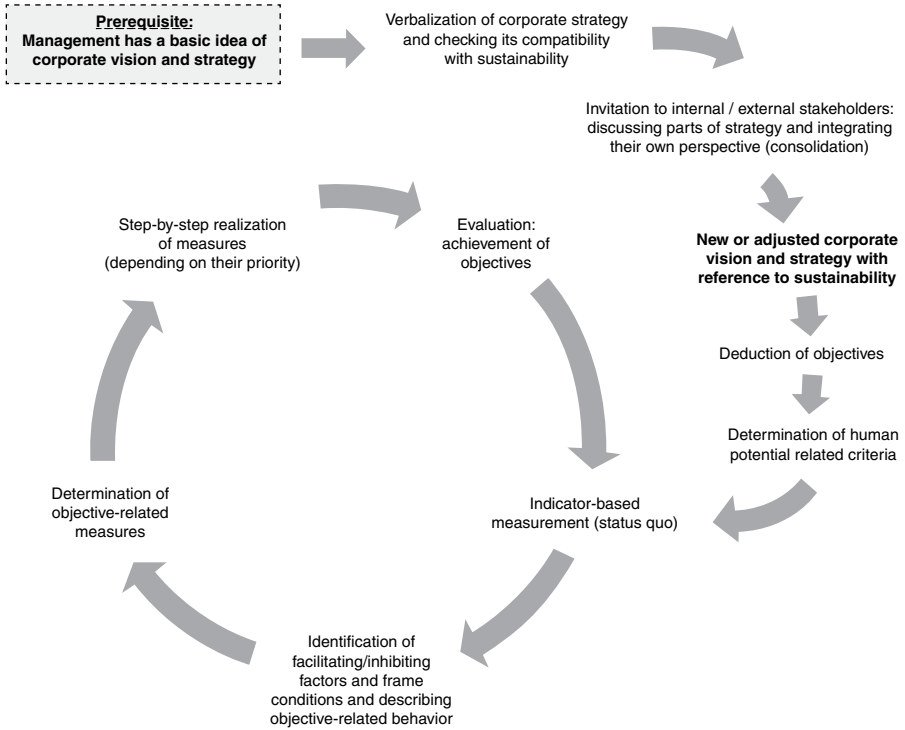

Figure 1.2 A roadmap to measure human potential.

to the promotion of human capital limit themselves to the development of indicators and to some degree to the description of the respective supporting measures. Considering human behavior as part of this topic cannot be observed in relevant literature, however. The chain of cause and effect as described in figure 1.2 has not yet been empirically proven, which requires further research: and in particular, finding the evidence of how the set target figures are being influenced by promoting or inhibiting factors. Another question could be, if the provided target behavior indeed leads to a sustainable organization.

In sum, the benefit of an extended measurement of human potential is obvious, whether the seriousness and continuous organization of the process is ensured. Even if a causal link between human capital and organizational economic success is not yet verified, the positive effects of stakeholder participation and behavior-based measures are obvious.

Based on previous experiences, it is common practice to measure financial indicators, probably, because the currency (e.g., dollar or euro) is known and financial controlling is much more familiar. Measurement of soft factors, which is a major part of human potential measurement, should experience a similar development: The "currency" has to receive increasing prominence and its measurement has to grow as a habit.

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CHAPTER 2

Links and Evaluation Possibilities of Intangible Value Creation in Organizations: The Importance of Human Resources Management, Knowledge Management, Organizational Learning, and Intellectual Capital (Management)

Katalin Pádár and Piroska Harazin

Introduction—Factors of Sustainable Competitive Advantage and Value Creation in the Knowledge-Economy

"Even in these financially challenging times, business performance always comes down to a firm's competitive advantages" (Teixeira & Werther, 2013, p. 333), while most of the sources dealing with intellectual capital (IC) point to the fact that IC can make significant contributions to and serve as a basis for competitive advantage, especially in the so-called knowledge era or knowledge economy (e.g., Armstrong, 2005; C.-J. Chen & Huang, 2009; Costa, 2012; Farsani, Bidmeshgipour, Habibi, & Rashidi, 2012; Gowthorpe, 2009; Guthrie, Ricceri, & Dumay, 2012; Joia, 2000; Obeidat, 2012; Ramezan, 2011; Russ, 2009; Spender, 2005; Sveiby, 1997; K. Wang, Chiang, & Tung, 2012; Wiig, 1997a) of the twenty-first century.

According to Coyne (1986, p. 54), however, the source of today's much desired sustainable competitive advantage "is not always so easy to identify," which is confirmed by the fact that there are several literatures about the definition and typology (factors, peculiarities) of (sustainable) competitive advantage S(CA), which are further discussed in the section on intellectual capital.

Barney (1995, p. 60) stated that the creation of SCA "depends on the unique resources and capabilities that a firm brings to competition in its environment." Similarly to many other researchers (Lado and Wilson, 1994; Pfeffer, 1995; Wright et al., 1994), Bowman and Ambrosini (2000, p. 5) argued that "[t]he intervention of people is necessary to create new use values from the acquired resources" and that the same applies to less tangible resources. Building on other scholars' works, G. Roos and Roos (1997, p. 415) claimed that IC "is the most important source" for SCA in companies. Although human capital (HC)—as one of the components of IC (see Table 2.1.)—has an emphasized role in the literature (e.g., Tóth & Kövesi, 2008), this work focuses on IC (it being a broader category); nevertheless, HC also appears, thanks to its importance.

The thoughts above all stress the importance of resources, especially people, labor—in sum, human resources (HR)—which leads to the so-called resource-based view (RBV) of the firm. According to the RBV of the firm (Barney, Wright, & Ketchen, 2001; Barney, 1986, 1991, 2001; Conner, 1991; Mata, Fuerst, & Barney, 1995; Penrose & Pitelis, 2009; Wernerfelt, 1984; Wright, McMahan, & McWilliams, 1994), CA is a derivative of a firm's unique assets and inimitable capabilities. Although the RBV acknowledges the importance of knowledge, supporters of the knowledge-based view (KBV) suggest going even further than that, putting a special attention on intangible resources (DeCarolis & Deeds, 1999), especially knowledge, which, according to the KBV (Grant, 1996a, 1996b; Kogut & Zander, 1992; Zack, 1999), is the most valuable and the strategically important one of a firm's resources as "knowledge assets may produce long-term sustainable competitive advantage" (Alavi & Leidner, 2001, p. 106).

Based on a literature review, Harangozó (2012) examined the relation between the concept of the RBV of the firm and IC and concluded that resources of the firm, which take part in value creation (VC), are connected to knowledge, and has no material appearance are called IC. He also added that strategic management and management control interprets IC wider than accounting does (Harangozó, 2012). This strategic interpretation (role, importance) of IC results in the need for wider knowledge in connection with the evaluation of this type of capital as well as its elements.

Table 2.1 Identified components of IC

Examples in the literature	*Identified components of IC*	*Selected examples of definitions/approaches of HC interpretations*
(P. Sánchez et al., 2001; Stewart, 1998) and (Abdullah & Sofian, 2012; Bontis, 1999; Costa, 2012; Guthrie et al., 2012; Moon & Kym, 2009; Sydler, Haefliger, & Pruksa, 2013) – *with reference to previous works)*	**Human capital, Structural capital, Relational** (in case of Stewart, 1998: **Customer) capital** *(In case of P. Sánchez et al., 2001) intangibles: HC, SC, RC)*	"As defined earlier, human capital represents the human factor in the organization; the combined intelligence, skills and expertise that gives the organization its distinctive character. The human elements of the organization are those that are capable of learning, changing, innovating and providing the creative thrust which if properly motivated can ensure the long-run survival of the organization." (Bontis, 1999, p. 443)
(Edvinsson & Sullivan, 1996; Edvinsson, 1997) and ((Bontis et al., 1999; Joia, 2000) – *with reference to previous works)*	**Human capital** (in case of Edvinsson and Sullivan (1996): human resources), **Structural capital** *Value Distinction Tree* (Roos et al., 1997 cited by Bontis et al., 1999, p. 398) *Based on literature review: Intellectual capital taxonomy (Joia, 2000)*	HC "includes owners, employees, contractors, suppliers, and all related humans who collectively bring to the firm their skills, know-how, and individual abilities. It represents the individual capabilities of the firm to solve problems. Human capital is one of the major elements of an organization's intellectual capital." (Edvinsson & Sullivan, 1996, p. 363) "Human capital is the collection of intangible resources that are embedded in the members of the organisation" (Bontis et al., 1999, p. 397)

Continued

Table 2.1 Continued

Examples in the literature	*Identified components of IC*	*Selected examples of definitions/approaches of HC interpretations*
(Sveiby, 1989)	**Know-how capital: individual capital, structural (organization's) competence**	
(Petrash, 1996, p. 366)	Based on previous authors: **Human capital, Organizational capital, Customer capital**	HC "is that knowledge that each individual has and generates" (Petrash, 1996, p. 366)
(Brooking, 1997, p. 364)	"Assets which give the company power in the marketplace" "Assets representing property of the mind—intellectual property" "Assets which give the organization internal strength" "Assets derived from the people who work in the organization"	
(Sveiby, 1997)	Intangible assets: **External structure, Internal structure, Employee competence**	
(Erickson & Rothberg, 2009, p. 160)	"A fourth area of intellectual capital, **competitive capital**, is also sometimes discussed (Rothberg & Erickson, 2002), though the value of knowledge concerning competitors is not as widely accepted as the three main pieces of IC." (The three main ones: Human capital, Structural capital and	"Human capital (HC) refers to individual knowledge, specifically about how to perform one's job. As workers and managers gain experience, obtain more education and training, or otherwise improve their job-specific knowledge, their human capital increases. Organizations with a highly skilled workforce

	Relational—(Rothberg & Erickson, 2002 and Bontis,1999 and Edvinsson & Sullivan,1996 cited by Erickson & Rothberg, 2009, p. 160)	hold considerable human capital." (Erickson & Rothberg, 2009, p. 160)
(Liebowitz & Wright, 1999)	Intangible asset valuation drivers: **Human, Customer, Process, Innovation** *(categories of intangible asset valuation drivers and also the metrics of developed by Skandia* (Edvinsson and Malone, 1997 cited by Liebowitz & Wright, 1999)	"…Human Capital meets the criteria for definition as organization intangible assets." (Liebowitz & Wright, 1999, p. 102)
(P. Sánchez et al., 2001)	In connection with the classification of intangibles they mention: **Critical intangibles, Intangible resources, Intangible activities**	
(Marr & Moustaghfir, 2005)	Component parts of IC: **Employees' skills and know-how, Organizational culture, Relationships with stakeholders, Organizational image and reputation, Technological infrastructure, Intellectual property rights, Practices and routines** (According to a deep literature review, they examined and grouped 22 definitions of IC.)	
(Abdullah & Sofian, 2012)	Fourth component: **spiritual capital** (Zohar and Marshall, 2004 cited by Abdullah & Sofian, 2012, p. 538)	

Continued

Table 2.1 Continued

Examples in the literature	*Identified components of IC*	*Selected examples of definitions/approaches of HC interpretations*
(Kaplan & Norton, 2004)	Intangible Assets: **Human capital, Information capital, Organization capital**	HC: "the skills, talent, and knowledge that a company's employees possess" (Kaplan & Norton, 2004, p. 2)
(Mavridis & Vatalis, 2012)	Based on previous literatures: **Learning capital, Human capital, Structural capital, Relational capital**	"All of them accepted commonly that the main parts of IC are the human capital (HC as competencies of the employed staff), the organizational capital (OC as firmware in form of procedures, documentations, systems and methods) and the relational capital (RC expressed as customer / supplier based advantages). Intellectual capital (IC) is therefore the sum of individual competencies (HC), structural (SC), organizational structures (OC) and relational capital (RC) as the sum of dynamic relationships (like "supplier and customer" relations in its broader cast)." (Mavridis & Vatalis, 2012, p. 280)
(Chang & Hsieh, 2011)	**Human capital, Structural capital, Social capital** (at the individual or the organizational level) (after literature review)	"…Human Capital (HC) comprises the competence, skills, experience, and intellectual agilities of the individual employees." (Bounfour, 2002; Brooking, 1996; Edvinsson and Malone, 1997; Ross et al., 1997; Stewart, 1997, Sullivan, 2000 cited by Chang & Hsieh, 2011, p. 4)

	A new intellectual capital component: **Innovation Capital** – (Chang, 2007 cited by Chang & Hsieh, 2011, p. 4)	
(Allee, 2000, p. 22)	"makes sense to bring both society and the earth into the intangible value picture" (mostly in connection with value; value domains), intangibles (Allee, 1999 cited by Allee, 2000, p. 22): **Business relationship, Internal structures, Human competence, Social citizenship, Environmental health, Corporate identity**	
(Joia, 2000)	Based on previous literatures: **Human capital, (Structural capital =) Innovation capital + Process capital + Relationship capital**	"Human capital does not belong to the firm, as it is direct consequence of the sum of its employees' expertise and skills." (Joia, 2000, p. 71)
(Leliaert, Candries, & Tilmans, 2003)	**Human capital, Customer capital, Structural capital, Strategic alliance (or partner) capital; Overlaps: 15 IC Sections – structuralized capital; non-structuralized internal capital; non-structuralized external intellectual capital.**	"…the base IC classes are in fact shared capital (Stewart, 1997). For instance, human capital (HC) is shared with its "owners": when the person leaves, he/she takes his/her skills and competences, reputation and potential along." (Leliaert et al., 2003, p. 203)

The aim and main contribution of this chapter is to call attention to the intertwining nature of those fields (IC; human resources management (HRM); knowledge management (KM); and organizational learning (OL)) that have a determining role in (S)CA, which also has to be consciously taken into account when it comes to their measurement—an area which is less and less avoidable even if quite challenging as the nature of intangible assets, immaterial resources makes their evaluation complex and difficult.

After briefly reviewing the concept and components of IC, and the currently existing approaches of its evaluation, we call attention to the interrelatedness of these factors, which influence (S)CA and suggest a new model (the integrated evaluation loop, IEL) for their joint evaluation as sufficient measurement, and evaluation in reference to the aforementioned areas are inevitable for an organization that wants to survive in today's (global) competition and ever-changing environment, where the capacity and capability for continuous adjustments and resilience (Välikangas, 2010) is becoming more crucial than ever before.

Evaluation of Intellectual Capital

IC has a positive relation with performance (e.g., Costa, 2012), takes a role in VC (e.g., Alcaniz, Gomez-Bezares, & Roslender, 2011; Lank, 1997), and can be defined as an important source of SCAs (see Table 2.2.).

Thanks to IC's important role, numerous sources deal with its strategic importance (e.g., Greco, Cricelli, & Grimaldi, 2013; Joia, 2000), its two-way relationship with strategy (Alcaniz et al., 2011)) and also concentrate on the necessity of its management, especially on its measurement and evaluation (e.g., Alcaniz et al., 2011; Kavida & Sivakoumar, 2009). (Although many sources (e.g., Sveiby, 2010) use the expressions "measurement," and "measuring," we focused on "evaluation" (e.g., Edvinsson, 1997); however, thanks to the sometimes nonunequivocal use of these terms in the literature, we use them as quasi-synonyms. (See, for instance, Kizlik's (2012) work about the differences between measurement, assessment, and evaluation.)

There are literatures about the methods of measurement and evaluation of IC. There are numerous sources that deal with the collection of these existing measurement methods (e.g., Alcaniz et al., 2011; Bontis, Dragonetti, Jacobsen, & Roos, 1999; Guthrie, Petty, & Johanson, 2001; Kavida & Sivakoumar, 2009; Mouritsen, 1998; Sveiby, 2010; Tóth & Kövesi, 2008); while recently it appears to be a field of research that still develops further (e.g., an improved method in Mavridis & Vatalis, 2012). In spite of the already wide range of these works, several scholars are interested in the gaps and shortcoming of the existing methods and concepts

Table 2.2 Selected examples of important factors influencing (sustainable) competitive advantage

Examined concepts	*Some important factors influencing (S)CA*	*Examples in the literature*
organizational advantage	organizational capabilities for creating and transferring knowledge	(Nahapiet & Ghoshal, 1998)
	coevolution of social and intellectual capital	
competitive advantage (CA)	knowledge (management)	(Choi & Lee, 2002; Wiig, 1997b)
	(organizational) learning	(de Geus, 1988; Kandemir & Hult, 2005)
	intellectual capital	(Costa, 2012)
sustainable/sustained competitive advantage (SCA)	knowledge (management)	(Colakoglu, Yamao, & Lepak, 2013; Ndlela & Toit, 2001; N. G. Theriou, Aggelidis, & Theriou, 2009a)
	human resources (management)	(Armstrong, 2005; Becker & Gerhart, 1996; Lado & Wilson, 1994; Pfeffer, 2005; Wright et al., 1994)
	knowledge sharing	(Barney, 1991)
	intellectual capital	(Alcaniz et al., 2011; Kaplan & Norton, 2004; Ramezan, 2011; Roos & Roos, 1997; Wiig, 1997a)
	organizational learning	(C. L. Wang & Ahmed, 2003)
	innovation	(Madhavan and Grover, 1998 and Subramaniam and Youndt, 2005 cited by C.-J. Chen & Huang, 2009, p. 104)

(e.g., Costa, 2012), while others expressed that no single measurement would ever exist to evaluate IC (e.g., Bukh, Larsen, & Mouritsen, 2001; Tóth & Kövesi, 2008).

Sveiby (2010) suggested four categories of measuring approaches for intangibles, which is an extended version of Luthy's and Williams's classifications, and also classified the methods according to different dimensions: organization level, IC component level, financial and nonfinancial. The mentioned four categories are direct intellectual capital (DIC) method, market capitalization method (MCM), return on assets (ROA) method, and scorecard method (SC), which also appear in later literatures (e.g., Kavida & Sivakoumar, 2009; Tan, Plowman, & Hancock, 2007).

As results of an examination of a wide range of IC measuring, evaluating methods without a preset focus (Intellectual Capital Navigator (Stewart, 1998, p. 246); The Invisible Balance Sheet (Sveiby, 1989); Balanced Score Card (Kaplan & Norton, 1996) (critics (Antonsen, 2013)); Skandia Navigator (Edvinsson, 1997); Dow's intellectual asset management model (Petrash, 1996); Meritum guidelines (P. Sánchez et al., 2001); Danish guidelines (Bukh et al., 2001); Intellectual Capital Accounting Indicators (Mavridis & Vatalis, 2012); Strategic Analysis Technique (SAT) (Carmeli, 2004); Guidelines for Disclosure of Intellectual Assets Based Management (METI, 2005); Analysis of intellectual capital indicators (J. Mouritsen, Larsen, & Bukh, 2001); Expanded view of value (Allee, 2000)), several similarities can be found. Some important factors of measuring methods and approaches are interesting from this work's point of view:

- strategy breakdown;
- importance of the structure of the measured asset/capital = building elements of intangible capital = breakdown (For example, Moon and Kym (2009, p. 256) suggested that the "first step to design an intellectual capital evaluation model is to frame intellectual capital elements into the specific hierarchical levels.");
- use of indicators-scorecards; financial (traditional) evaluation—nonfinancial evaluation;
- different dimensions, levels, evaluating with questions—not just quantitative evaluation.

It is obvious even after this brief review of the already existing methods that the measurement and evaluation of IC is a challenging task. In order to reach a better understanding of the complexity of the (measurement, evaluation) problem regarding IC, it is necessary to first thoroughly examine and understand the concept itself.

Intellectual Capital

Different basic definitions and concepts of IC have appeared in literature in the past decades (e.g., Bontis et al., 1999; Brooking, 1997; Edvinsson & Sullivan, 1996; Roos & Roos, 1997; Stewart, 1998; Sveiby, 1997); however, redefining or methodizing the existing definitions is also a popular topic among scholars nowadays (e.g., Abdullah & Sofian, 2012; Bukh et al., 2001; Chang & Hsieh, 2011; Greco et al., 2013; Kavida & Sivakoumar, 2009; Ramezan, 2011; Tóth & Kövesi, 2008).

Owing to the different definitions and concepts that are available, different expressions have been and are being used in the literature, for example: know-how capital (e.g., Sveiby, 1989); intangible assets (e.g., Kaplan & Norton, 2004; Sveiby, 1997); intellectual capital (e.g., Edvinsson, 1997; Stewart, 1998), or intangible resources and intangible activities (P. Sánchez et al., 2001). The definition of IC is problematic (e.g., Marr & Moustaghfir, 2005); however, the examination of the structure and components of IC can help understand the exact meaning of the concept, which contributes to the understanding of its value and also supports its measurement and evaluation.

Edvinsson and Sullivan (1996, p. 358) started their work with a clear interpretation about what knowledge means in the business context and defined IC "as knowledge that can be converted into value," while Brooking (1997, p. 364) gave a bit more well-defined definition—namely, that IC "is defined as the difference between the book value of the company and the amount of money someone is prepared to pay for it." Brooking (1997) and G. Roos and Roos (1997) also emphasized that IC is a hidden asset, which frequently does not appear, is not fully captured in the balance sheet. G. Roos and Roos (1997, p. 415) defined the content of IC in a very simple way: "what is in the heads of organizational members, and what is left in the company when they leave." Bontis et al. (1999, p. 397) called attention to the fact that IC "is something absolutely peculiar to each and every company (. . .) IC is context specific."

To better understand the complexity regarding IC's definition, we collected the relevant literatures to analyze IC's main, major components (categories), this collection strengthens the generally accepted (e.g., P. Sánchez et al., 2001; Stewart, 1998) classification of IC as a result: the main components are the human, structural, and consumer (relational) capitals. However, it is also important to mention that there are literatures (e.g., Edvinsson & Sullivan, 1996) where only human and structural capitals appear as the main components. Further components (approaches) also appear in different literatures; Table 2.1 presents additional components (categories) that

Table 2.3 Intertwining concepts—overlaps between IC, HRM, OL, and KM in the literature

Intertwining concepts	*Literature*
IC – HRM	(Cabello-Medina, López-Cabrales, & Valle-Cabrera, 2011) (Afiouni, 2009) (Hatch & Dyer, 2004) (Yang & Lin, 2009) (Longo & Mura, 2011)
IC – OL	(Liyanage, 2002) (Hsu & Fang, 2009)
IC – KM	(Farsani et al., 2012) (Wiig, 1997a) (López-Nicolás & Meroño-Cerdán, 2009) (Sydler et al., 2013)
HRM – KM	(Wiig, 1997a) (C.-J. Chen & Huang, 2009) (Lopez-Cabrales, Pérez-Luño, & Valle-Cabrera, 2009) (Morris et al., 2009) (Obeidat, 2012) (Y.-Y. Chen & Huang, 2012) (K. Wang et al., 2012) (Minbaeva, 2013)
HRM – OL	(S. Kang, Morris, & Snell, 2007) (Prieto & Santana, 2012) (Santiago & Alcorta, 2012)
OL – KM	(Bohn, 1994) (C. L. Wang & Ahmed, 2002) (Goldman, 2010) (Jamalzadeh, 2012) (Gunsel, Siachou, & Acar, 2011) (Liao & Wu, 2010) (Wu, Du, Li, & Li, 2009) (Irani, Sharif, & Love, 2009) (N. G. Theriou, Aggelidis, & Theriou, 2009b)
IC – HRM – KM	(Goel & Rastogi, n.d.)
IC – HRM – OL	(S. Kang, Snell, & Swart, 2012) (S.-C. Kang & Snell, 2009)
IC – OL – KM	(Choo & Bontis, 2002) (Liyanage, 2002) (Ramezan, 2011) (Vera, Crossan, & Apaydin, 2011)

Continued

Table 2.3 Continued

Intertwining concepts	*Literature*
HRM – OL – KM	(CIPD, 2000) (G. N. Theriou & Chatzoglou, 2009) (Currie & Kerrin, 2003) (Iqbal, Toulson, & Tweed, 2010) (S. Kang et al., 2007)
IC – HRM – OL – KM	(Intan-Soraya & Chew, 2010) (Harazin & Pádár, 2013)

are mainly based on the three generally accepted ones. In addition, thanks to HC's emphasized role, definitions and approaches of HC also appear in Table 2.1. (For example, Tóth and Kövesi (2008, p. 4) examined the definitions of IC from different experts and concluded that "the importance and honoured role of human capital is stressed by every expert.")

The importance of SCA and VC seems to be of no question for successful companies, although achieving any of them is not an easy assignment, especially if the complexity of the factors influencing SCA is also taken into account. Based on a nonexhaustive literature review, Table 2.2 presents a summarized collection of these factors.

As it has been touched upon in the first paragraphs of this chapter (cf. RBV, KBV, etc.), findings summarized in Table 2.2 also highlight the fact that besides IC, HRM, KM, and also OL, which is closely related to the previous two, is also an important contributors of (S)CA. Consequently, it is understandable that more and more attention is dedicated to these intertwining fields, as the acknowledgment of their strategic role can mean a step toward success and thus toward the achievement of VC and SCA.

In line with this argumentation, the number of sources examining the above discussed concepts together in any combination clearly shows a growing trend, for example, "the KM/IC discipline represents a very young, attractive academic field that welcomes contributions from a variety of academics and practitioners" (Serenko, Cox, Bontis, & Booker, 2011, p. 333). However, the number of works dealing with IC, KM, OL and (strategic) HRM together (e.g., Harazin & Pádár, 2013; Intan-Soraya & Chew, 2010) is still rather low. According to our literature review, different overlaps can be found between IC, HRM, OL, and KM; selected examples of the intertwining concepts are presented in Table 2.3.

The intertwining concepts show a real complex and sensitive field: there are relations between IC, OL, and KM; however, it is hard to define obvious ones as the overlaps and triangular interdependencies (e.g., OL—KM—IC;

KM—HRM—OL; or KM—HRM—OM (Huber, 1991; Spender, 1996)) make the examination hard and difficult, as well as the management's work and the interpretation, evaluation of values added even more complex in practice.

The Integrated Evaluation Loop

Our literature review showed that HRM, KM, and OL are fields that are closely related to IC and consequently contribute to (S)CA as well as to VC. Therefore, we believe that when interpreting, defining, and evaluating the (added) value of IC, HRM, KM, and OL, a holistic approach should be followed, handling these areas with a more integrated approach. Interpretation, however, can be especially challenging in case of the (performance) evaluation of these areas as the following questions arise: Are the evaluation methods of IC usable in case of KM, OL, or vice versa? How can these intangible values be evaluated easily, trustworthily? It is unsure whether a common, integrated method for evaluation exists, but through the interpretation of the relations between these areas one can get closer to a usable, effective evaluating framework.

With the help of a literature review and our professional experience, we examined the meaning and characteristics and the possible methods of measurement, evaluation of the previously discussed strategically important areas of organizations. Based on this, we suggest the following approaches:

- "multicomponent" approach—due to the intertwining and overlapping nature of the examined fields (IC, KM, OL, HRM) we suggest that they all, each as an additional component of a firm's performance, should be first identified at the given organization, and then be measured, evaluated somehow. In our opinion, it is not enough to concentrate on just one (e.g., IC) or some of them as they all contribute to the organization's success. (The degree and means of these contributions, however, vary and are definitely firm-specific.) We suggest processes being broken down into components, which are small enough to enable and facilitate better understanding of these areas, and big enough to function as basic units of measurements, key performance indicators (KPIs);
- "flexible customization" approach—the presence and level of the (strategic) importance of the examined fields are firm-specific, the evaluation framework should therefore be flexible and changeable so as to reflect the firms' actual relation with IC, KM, OL, and HRM. Given that no single, common model or framework fits all organizations, a flexible one, which can and should be custom-tailored to a given

organization's peculiarities, should be compiled, enabling organizations to focus on measures with real relevance;
- "integrated approach"—due to the intertwining and overlapping nature of the examined fields (IC, KM, OL, HRM), we suggest their combined performance measurement;
- "indicatoralizing" approach—evaluation with indicators according to a wide range of viewpoints, which enables the identification of observable patterns according to which necessary adjustments can/should be made and which provides room for qualitative analysis as well.

We suggest the combined application of the previously described approaches and the following evaluation process (Figure 2.1.), which we call the integrated evaluation loop (IEL) model. Suggested steps of the model (the evaluation loop) should be interpreted as follows:

- Multicomponent approach—Given that IC, HRM, OL, and KM are (should be) present in every organization to some degree at least, their existence should be consciously taken into account.
- Flexible customization approach—Relevant components (e.g., related subprocesses) of IC, HRM, OL, and KM (IC_1, $IC_2 \ldots IC_n$; HRM_1, $HRM_2 \ldots HRM_n$; OL_1, $OL_2 \ldots OL_n$; KM_1, $KM_{2\ldots}$ KM_n) should be identified (and sufficiently updated whenever necessary, e.g., due to an acquisition).
- All the theoretically possible relations between these components should be thought through.
- Integrated approach—Existing firm-specific relations between these components (i.e., a certain subset of the *field of potential relations*) should be identified as combinations of the previously defined components (see Table 2.3) (e.g., IC_nOL_2; OL_nKM_2; $IC_2OL_nKM_2$; $IC_2HRM_2KM_n$; $IC_nHRM_nOL_{n1}KM_1$).
- Flexible customization approach—As a next step, those ones should be selected (e.g., $IC_2OL_nKM_2$; $IC_2HRM_2KM_n$) that are of real relevance to the firm.
- Indicatoralizing approach—Then KPIs should be built, using the building blocks that resulted from the previously described process and identified relations (e.g., IC_2; HRM_2; OL_n; KM_2; KM_n).
- One of the most important elements of the IEL model is systematic feedback, which should be based on the evaluation of KPIs. Findings of these evaluations should be reflected to and acted upon, if necessary, so as to enable the inevitable learning processes (at any level) that contribute to the organization's capacity for resilience, VC, and SCA.

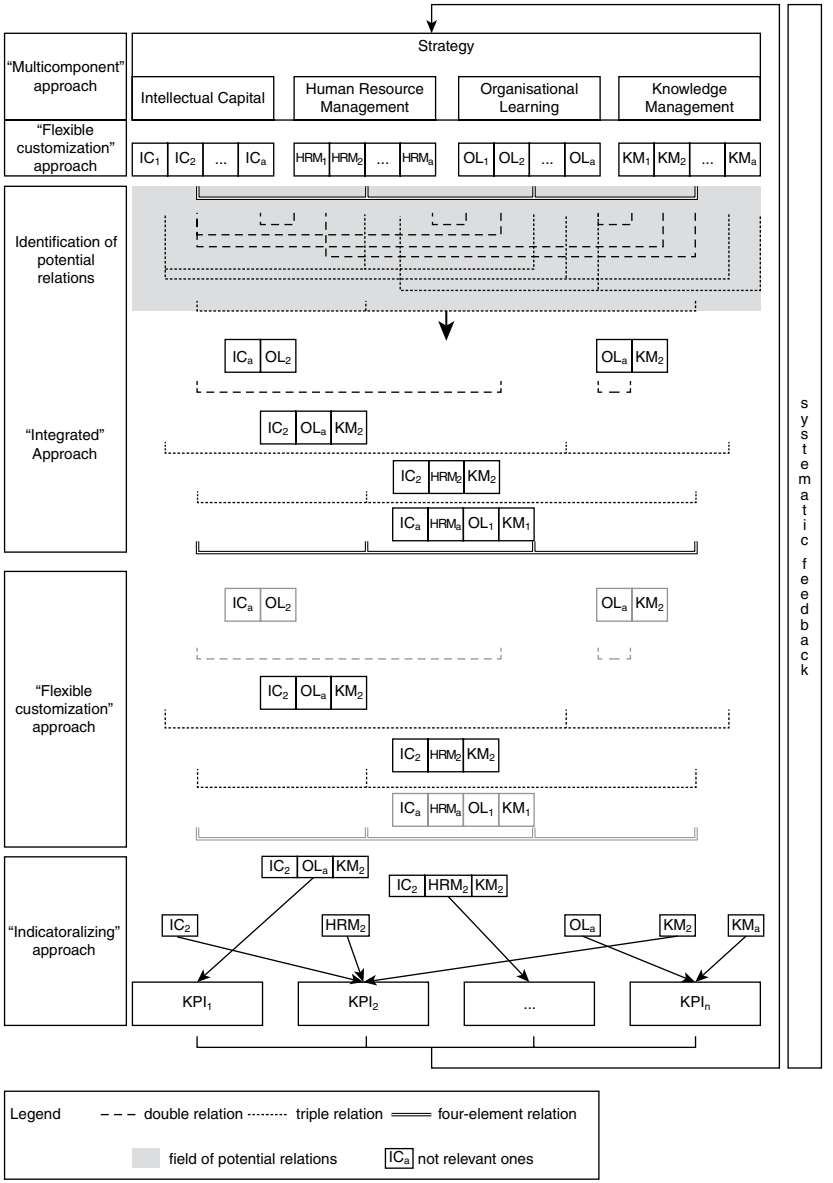

Figure 2.1 The Integrated Evaluation Loop (IEL) model.

In conclusion, measurement and evaluation can and have to contribute to the continuous development of the organization through the establishment of an infinite loop of feedback-based learning and innovation (and therefore change if necessary), which seems to be inevitable in today's ever-changing (business) environment, where the capacity and capability for resilience is more crucial than ever before.

To further enlighten why the suggested approaches and each of the examined areas of the model are important and how complex and interconnected they really can be, the next sections provide a more detailed interpretation for a better understanding of the approaches and their (potential) elements.

The "Multicomponent" Approach and the "Integrated" Approach

The chapter has already touched upon the idea that IC, HRM, OL, and KM are (and should be) present in every organization—up to some degree at least. The "multicomponent" approach of the IEL model calls attention to the fact that their existence should be consciously taken into account, and that each should be integrated into the measurement system of the organization. In addition, the "integrated" approach highlights the need for the exploration of how these areas are connected (at a given organization) and urges the creation of their combined (integrated) measurement whenever it is necessary, based on the organization's real-life processes.

We believe that the very first step toward achieving these goals and being capable of thinking within the framework of these approaches should be the precise understanding of the areas and concepts in question. Hence, the upcoming sections provide a nonexhaustive review of these concepts (i.e., definitions of HRM, KM, OL, and related phenomena).

Human Resources Management

Fombrun et al. (1984) pointed to the importance of HR already in 1984, while Bowman and Ambrosini (2000, p. 5) stated that "labour performed by organizational members is the source of the firm's profit." In additional, Longo and Mura (2011, p. 278) claimed that "IC is a resource that is embedded in the actions and capabilities of the individuals that operate in the company" and "studies (e.g., (Ramezan, 2011)) have identified specific human resource configurations and organisational structures as antecedents of IC."

At first, HR were solely seen as costs to be minimized (Armstrong, 2005; Becker & Gerhart, 1996; Kaufman, 2001; Pfeffer, 2005); however, a more

recent approach, which focuses on VC and supports the idea of HR's new, strategic role, "suggests that HR (both the function and the system) contributes directly to the implementation of the operating and strategic objectives of the firms" (Becker & Gerhart, 1996, p. 780). Even though it is not yet a reality but rather a stated aim (at most) for most of the companies, more and more authors (e.g., Fernández-Aráoz, Groysberg, & Nohria, 2011; Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Longo & Mura, 2011; Schuler, Jackson, & Tarique, 2011) argue that HRM should become a strategic partner within the organization. Considering that HC is a type of IC, which latter is proved to be an important component and driver of competitiveness, the argument for HRM's strategic role seems to be particularly valid and important.

Having incorporated the "sustainability dimension," Watson (2010, p. 919) proposed the following "generic definition" of HRM, which "is the managerial utilisation of the efforts, knowledge, capabilities and committed behaviours which people contribute to an authoritatively co-ordinated human enterprise as part of an employment exchange (or more temporary contractual arrangement) to carry out work tasks in a way which enables the enterprise to continue into the future," which also points to HRM's crucial role in a firm's long term survival and success.

However, Lawler (2008, para. 3) claimed even if most companies value HC, "few are run that way"; probably because "the mechanisms by which human resource decisions create and sustain value are complicated and not well understood" (Becker & Gerhart, 1996, p. 780). Furthermore, while "an influx of personnel can augment a firm's knowledge" (Madsen, Mosakokwski, & Zaheer, 2003 cited by Sydler et al., 2013) talent is also one of the critical issues (e. g., Daruka & Gyökér, 2011; Lewis & Heckman, 2006): "It's no secret that these [multinational] companies struggle with talent shortfalls." (Brooke, 2012, p. 34). The list why HRM's strategic role (and hence its proper evaluation) is crucial for the survival and the success of a company could be continued for long, but many sources (e.g., Cascio & Aguinis, 2008; Colakoglu, Lepak, & Hong, 2006; Gyökér & Finna, 2011; Savitz & Weber, 2013) point to the fact that HRM has to face and overcome global (talent) challenges (Schuler et al., 2011), and related issues of knowledge sharing (S. Wang & Noe, 2010) and KM—especially in today's globalized environment.

Organizational Learning

The only CA "the company of the future will have is its managers' ability to learn faster than their competitors," (de Geus, 1988, p. 74). Hayes (2007,

p. 61) argued that "[i]f organizations are to formulate effective strategies they need to have the capacity to learn from their experience and to use this learning to modify the shared mental model that guides the way they manage strategic change." Among others (e.g., Garratt, 1999; C. L. Wang & Ahmed, 2003), Fiol and Lyles (1985) underlined the strategic importance of OL just as Jiménez-Jiménez and Sanz-Valle (2011, p. 408) who referred to several sources proving the positive relationship between OL and firm performance (e.g., Bontis, Crossan, & Hulland, 2002; Santos-Vijande, López-Sánchez, & Trespalacios, 2012) and underlined OL's role in (S)CA (see also Table 2.2).

However, precisely understanding what the term OL actually covers and contains, which is crucial for the understanding of its contribution to VC, is a challenge even for researchers as many different approaches are identifiable: the OL literature is full of multiple interpretations and unclear information of the concept (Fiol & Lyles, 1985; Miller, 1996); and "there is still absence of agreement on the exact scope of this construct (Bell et al., 2002)" (J. Á. L. Sánchez, Vijande, & Gutiérrez, 2010, p. 1613).

Although many definitions are available on what OL is (e.g., according to Miller (1996, p. 486), OL is "the acquisitions of new knowledge by actors who are able and willing to apply that knowledge in making decisions or influencing others in the organization"), one of the most quoted ones is that of Argyris and Schön (1996, p. 16): "Organisational learning occurs when individuals within an organisation experience a problematic situation and inquire into it on the organisation's behalf. They experience a surprising mismatch between expected and actual results of action and respond to that mismatch through a process of thought and further action that leads them to modify their images of organisation or their understandings of organisational phenomena and to restructure their activities so as to bring outcomes and expectations into line, thereby changing organizational theory-in-use."

Wang and Ahmed (2002, 2003) provided a review highlighting the different focuses (individual learning; process or system; culture or metaphor; knowledge management; continuous improvement) of definitions so as to be able to create their own: "In the hyperdynamic business context, organization learning is the process by which the organization constantly questions existing product, process and system, identify strategic position, apply various modes of learning, and achieve sustained competitive advantage" (C. L. Wang & Ahmed, 2002, p. 14)—as both a summary and an upgrade to the previous ones, with a focus on creativity and innovation. Levine (2001, p. 23) underlined the need for differentiation between OL and the learning organization (see also C. L. Wang & Ahmed, 2002, 2003).

Berghman et al. (2013) stressed the importance of the so-called deliberate learning mechanisms (see also: Bohn, 1994) with the hope of inspiring firms to create more conscious KM designs in order to achieve not only "information-rich" (Bettis & Prahalad, 1995, p. 6) but also interpretation-rich systems.

Many scientific works on OL cover the issue of typology, the following list provides a nonexhaustive sample of the different observable approaches: "content of learning" and "levels of learning" (Fiol & Lyles, 1985); six modes of learning along the "mode of thought and action" vs. "voluntarism" dimensions (Miller, 1996); adaptive vs. developmental learning (four subtypes) (Ellström, 2001); five focuses (individual learning, process or system, culture or metaphor, knowledge management, continuous improvement) of the concept and related practices (C. L. Wang & Ahmed, 2003); four fundamental stages (information acquisition, ~ distribution, ~ interpretation, organizational memory) of OL (J. Á. L. Sánchez et al., 2010, p. 1614).

It could already be visible from Miller's (1996) definition just as from the previously listed examples of typologies that OL and KM are hardly separable, related processes. According to Hayes (2007, p. 65), OL "involves the acquisition of knowledge, the recognition of its potential and its application to improve organizational performance." Buckley and Carter (2000) said that learning is either the transfer of existing knowledge or the discovery of new knowledge. (cf. Farsani et al., 2012) Wang and Ahmed (2003, p. 12) noted that OL and KM are "two parallel-developed concepts in the new economy and often refer to each other in their dimensions and practices," while Irani et al. presented the idea that OL "might be the ideal that organizations want to accomplish, knowledge management is the reality of what can be achieved" (Irani et al., 2009, p. 200). "Just like a system," said Liao and Wu (2010, p. 1096), KM "is an important input," and OL "is a key process, then organizational innovation is a critical output."

Having cited other experts, Irani et al. (2009, p. 202) aimed at understanding the relationship that exists between KM and OL and stated that OL and KM "are similar in some ways but have different aims": while KM tries to find people, processes, and technology to better manage and make use of intellectual assets, OL is the realization and usage of KM concepts.

Knowledge Management

Chen and Huang (2007, p. 104) claimed that "[v]alue is created only when knowledge is shared throughout an organization and applied where it is

needed." However, this poses a significant challenge on (multinational) companies as inter- and intrasubsidiary knowledge sharing are often still issues that have to be solved (e.g., Adenfelt, 2010; Colakoglu et al., 2013; Perri & Andersson, 2013; S. Wang & Noe, 2010).

Hayes referred to Huber (1991) regarding the importance of information distribution, just as how Pfeffer (2005, p. 99) argued that if people want to be a source of CA, "they must have the information necessary to do what is required to be successful." Holsapple and Wu (2011, p. 271) provided evidence that "superior KM performance is indeed a predictor of superior bottom-line performance."

Spender (2005) highlighted the hardships of defining knowledge (see also K. C. Lee, Lee, & Kang, 2005), and consequently those of KM—a challenge, which definitely has consequences when it comes to the evaluation of KM. Goldman (2010, pp. 259–260) distinguished three generations of KM: the first before 1995, the second after 1995 (when Nonaka and Takeutchi's (1995) influential work was first translated to English), and a recent, new approach, "in which knowledge is not seen any more as an inert 'thing' that can be identified and catalogued."

Reich, Gemino, and Sauer (2012) defined KM as the sum of three elements (see Table 2.4): the enabling environment, knowledge practices, and knowledge stock (cf. Russ, Fineman, Paternin, and Jones's (2009) three enablers supporting a KM strategy: levers, processes, and systems).

Organizational memory (OM) (e.g., Walsh & Ungson, 1991) also needs to be mentioned here with regard to KM (and OL) as it plays a crucial role in avoiding knowledge erosion (Hendriks & Vriens, 1999) and therefore (implicitly) enhances the potential for VC.

A growing number of recent studies (e.g., Adenfelt, 2010; Luo, 2005; Ratcheva, 2009) examine inter- and intrateam knowledge sharing and knowledge integration efforts, both within and between projects as well as subsidiaries even across borders, also support the importance of the need for proper KM.

However, if KM "is to take hold rather than become merely a passing fad, it will have to be solidly linked to the creation of economic value and competitive advantage," stressed Zack (1999, p. 142), implicitly pointing toward the need for KM assessment.

Given the intertwining nature of the examined fields, we believe that trying to measure them (completely) separately will not provide valuable information in the long run as the results of such evaluations could easily become distorted. Therefore, we see the need for the application of the so-called integrated approach.

Table 2.4 The main elements of knowledge management and their respective meanings

Main elements of knowledge management (KM)	
1) the enabling environment (both technological and social)	• The concepts of knowledge-based systems (KBS) (e.g., Hendriks & Vriens, 1999) and knowledge management systems (KMS) ("a class of information systems applied to managing organizational knowledge" (Alavi & Leidner, 2001, p. 114)) (see also S. Tseng, 2008) have a crucial role in the build-up of the proper enabling environment. • Chuang (2004) also pointed to the importance of techn(olog)ical KM resources, while Liao (2003) provided a thorough review of KM technologies. • Luo (2005) highlighted the importance of the enabling environment in the context of MNCs where the capability for inter- and intra-subsidiary information and knowledge is especially vital.
2) knowledge practices	• "Knowledge Practices are the activities that generate usable knowledge, either in explicit or tacit forms." (Reich et al., 2012, p. 666) • Numerous studies are available that divide the KM into sub-processes, for instance: - knowledge spiral: socialization, internalization, combination, and externalization (Nonaka & Takeuchi, 1995); - transfer, acquisition, codification, creation (Hendriks & Vriens, 1999); - knowledge management cycle (Wiig, de Hoog, & van der Spek, 1997); - creation and transfer (von Krogh, Nonaka, & Aben, 2001); - creation, accumulation, sharing, utilization, and internalization (K. C. Lee et al., 2005); - creation, sharing, distributing (Alavi & Leidner, 2001); - creation or codification, diffusion, exploitation (Chen & Lin, 2004; Wong, 2000 cited by C.-J. Chen & Huang, 2007).
3) knowledge stock	• "Stocks of knowledge are accumulated knowledge assets which are internal to the firm" (DeCarolis & Deeds, 1999, p. 954). • Stocks and flows have to be distinguished as "while flows can be adjusted instantaneously, stocks cannot." (Dierickx & Cool, 1989, p. 1506) • "'Stock' measures provide a snapshot of the level of knowledge at a particular time. They reflect knowledge, but also organizational performance (e.g., survival or cost) and individual attributes (education and experience) as proxies for knowledge." (Boudreau, 2002, p. 11)

"Flexible Customization" Approach

The presence and level of the importance of IC, HR, KM, and OL are firm-specific; therefore, some flexibility or room for customization should be included in any model that aims to provide a somewhat generally useable evaluation framework. It should be capable of reflecting the firm's actual relations with IC, KM, OL, and HRM as much as possible. Hence, the IEL model proposes the "flexible customization" approach, which allows for the evaluation be custom-tailored to a given organization's peculiarities.

"Indicatoralizing" Approach

The "indicatoralizing" approach in the IEL model gives the actual assessment of IC, HRM, KM, and OL and their identified, flexibly customized, integrated relations by defining KPIs. Their combined evaluation is possible because the separate assessment methods of IC, HRM, KM, or OL can be integrated into one model, thanks to the similarities in their assessment peculiarities (see Table 2.5). As in case of the evaluation of IC, the nonexhaustive literature review allowed us to draw conclusions about the measurement and evaluation of KM, OL, and HRM:

- the understanding of the concepts is crucial, namely, breaking down the respective concept and/or strategy to its components is necessary—not only theoretical building blocks of these concepts should be understood, but relevant real-life practices should also be analyzed;
- use of indicators;
- financial and nonfinancial perspectives also appeared in the literature.

Different approaches (e.g., Hendriks & Vriens, 1999; Wu et al., 2009) can be found in connection with the measurement of KM. Rogers and Wright (1998) discussed performance information markets (PIMs), while Liebowitz and Wright (1999) proposed a valuation model for HC.

In spite of the existence of solutions of measurement and evaluation in case of KM, OL, and HRM, difficulties and insufficiencies are also mentioned in the literature (see Table 2.6).

KPIs in the IEL model represent the possibility of a combined evaluation of IC, HRM, KM, and/or OL; however, evaluation itself is not enough for achieving improvement in performance: based on these KPIs, systematic feedback is necessary, which is ensured in the model by the "evaluation loop"—the repeated application of which (coupled with the respective adjustments and the consequently achievable performance improvement) would show a spiral structure.

Table 2.5 Conclusions about the measurement of KM, OL, and (S)HRM based on literature review

Conclusions about the measurement of KM, OL, and (S)HRM	*Selected example from literature – methods*
"breaking-down"	"A conceptual framework of KMS, referenced to the KM gaps (Lin & Tseng, 2005b), is used as the basis of this study. It has four components": KM strategy, The plan of KM, Implementation of KM plan, KM performance (S.-M. Tseng, 2008, p. 735). Bohn (1994) claimed that a possible way to visualize technological knowledge is the knowledge tree. López-Nicolás and Meroño-Cerdán (2009) wrote about the Strategi model, which is a systematic methodology for KM audits (KM audits are considered as the first part of any KM strategy) As a conclusion of their research, Spector and Davidsen (2006) believed that measurable aspects of OL include actions, goal formation processes, leadership engagement, reflective activities, sentiments, preferences, team processes, tolerance for errors. According to the authors, *not only exact measurement methods* can help understand the value of knowledge, but consideration of different approaches, models regarding the theme of knowledge, KM, can also be useful: - 'knowledge value chain' (C. C. Lee & Yang, 2000) - 'model of knowledge creation' (Nonaka, Toyama, & Konno, 2000) - 'conceptualization of knowledge strategy to address any gaps'(Zack, 1999)

"indicators"	M.-Y. Chen et al. (2009, p. 8450) referred to one of their previous works (Chen & Chen, 2005 cited by M.-Y. Chen et al., 2009) and mentioned that KM evaluation methods can be classified according to eight categories ("qualitative analysis, quantitative analysis, financial indicator analysis, non-financial indicator analysis, internal performance analysis, external performance analysis, project-orientated analysis, and organizational-orientated analysis, together with their measurement matrices for different research and problem domains").
	K. C. Lee et al. (2005) wrote about the knowledge management performance index (KMPI) for assessing the performance of a firm in its KM.
	S.-M. Tseng's (2008) studies' "explores the KMS performance indicators which are useful to assess the KMS performance for firm" (S.-M. Tseng, 2008, p. 734). They "followed the logic of Lee et al. (2005) in developing knowledge management system performance index (KMSPI)" (S.-M. Tseng, 2008, p. 738).
	The approach of M.-Y. Chen et al. (2009) integrated analytical network process (ANP) with balanced scorecard (BSC) being adopted as the indicators of KM performance measurement (KMPM) and emphasized that "the most important task of the KM performance measurement is the comparison of a firm with its main competitors" (M.-Y. Chen et al., 2009, p. 8458).
"financial – non-financial"	C. Lee and Yang (2000, p. 785) referred to van Burren (van Buren, 1999 cited by C. C. Lee and Yang, 2000) saying that knowledge performance can be measured in two categories (financial performance–financial assessment; nonfinancial measures).
	Wilkins et al. (1997, p. 64) defined the value of a knowledge asset as "the sum of the cost-based value and the added value, summed over all relevant processes in which it is a resource."

Table 2.6 Examples from literature about difficulties and insufficiencies of measurement and evaluation of KM, OL, and HRM

Evaluation in case of…	*Literature about difficulties, insufficiencies*
knowledge assets, knowledge	Wilkins, Drive, van Wegen and de Hoog (1997) mentioned a struggle in connection with the development of a comprehensive framework for identification, valuation and management of knowledge assets and also the lack of a generally agreed framework for defining and valuing it.
	Othman, Yao, Mahdi and Jing (2011, p. 1758) mentioned that "few studies explicitly distinguished knowledge management self's performance from its effectiveness."
	Wiig, de Hoog and van der Spek (1997) concluded in connection with measurability that the "value of knowledge is hard to determine, workable valuation schemas are not yet available" (Wiig et al., 1997, p. 26).
learning, organizational learning	Fiol and Lyles (1985) claimed that the definition and measurement of learning is a challenge.
	Spector and Davidsen (2006, p. 68) also wrote that OL "is difficult to measure, partly because situations and problems are complex and dynamic, and partly because collecting appropriate measures is itself a difficult and costly enterprise."
HRM	Colakogle, Lepak and Hong (2006, p. 210) concluded that "HRM researchers have varied in the level of analysis of the performance measures they emphasized" and—by the help of a literature review—showed different level outcomes (in case of traditional HRM research and SHRM research). Their "key point is that relying on a single performance measure to assess the benefits or implications of HRM in different types of companies and in different contexts may mask the relative importance of different performance measures for those companies" (Colakoglu et al., 2006, p. 216).

Summary

The strategic importance of HRM (e.g., Boxall, 1998; Kaufman, 2001; Lawler, 2008; Lengnick-Hall et al., 2009; Rogers & Wright, 1998; Ruona & Gibson, 2004; Savitz & Weber, 2013) KM (e.g., Erden, von Krogh, & Nonaka, 2008; Russ, 2009; Wu et al., 2009), and OL (e.g., Berghman et al., 2013; de Geus, 1988; Fiol & Lyles, 1985; Hayes, 2007; Liao, Chang, & Wu, 2010; J. Á. L. Sánchez et al., 2010) as well as their (potential) contribution to (S)CA and VC are given increasing attention nowadays, especially if the concept and role of IC is also taken into account (e.g., Alcaniz, Gomez-Bezares, & Roslender, 2011).

The aim and main contribution of this chapter was to call attention to the intertwining nature of the examined fields, which have to be consciously taken into account when it comes to their evaluation—an area that is less and less avoidable even if quite challenging as the nature of intangible, immaterial resources makes the process complex and difficult. We suggested different approaches ("multicomponent," "flexible customization," "integrated," and "indicatoralizing") and additionally the IEL model as a structured means of combining these approaches as an evaluation process covering IC, HRM, KM, OL, and the possible intertwining relations.

The importance and the links between the aforementioned fields should be recognized and precisely understood (in a firm-specific way) so that they can be evaluated as sufficient measurement and evaluation in reference to these areas are inevitable for an organization that wants to survive in today's (global) competition and ever-changing environment.

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CHAPTER 3

Human and Relational Capital as a Growth Factor: The Case of Korean New Technology–Based Venture

Youngkeun Choi, Seungwha (Andy) Chung, and Ji Sun Lim

Introduction

Developing countries need to strengthen their research capabilities in order to catch up with advanced countries. For this, a country's activities to develop, adapt, and harness its innovative capacity are critical for its economic performance in the long run (Ernst & Naughton, 2008). As new technology-based ventures (NTBVs) introduce disruptive technologies and perform the role of Schumpeterian entrepreneurship, or "creative destruction," in the economy, they are an especially important source of new jobs and provide a crucial stimulus to national economies (Audretsch, 1995). So the factors that drive their performances have increasingly attracted the attention of entrepreneurship scholars as well as policy makers. While there is considerable literature on factors affecting the survival of new firms, relatively few of these focus on NTBVs, and there are even fewer studies on the individual founders of such ventures (Colombo & Grilli, 2009). Previous studies on the effect of human capital on new firm survival have often employed an insufficient range of human capital types or inappropriate proxies (Gimmon & Levie, 2009).

NTBVs need a greater amount and variety of resources for research and development (R&D) and marketing to differentiate and commercialize new

technologies compared to traditional businesses. So, it is very important for NTBVs to obtain the requisite resources from external resource holders. However, NTBVs involve not only uncertainty that general ventures possess but also additional uncertainty, for new technology is by its very nature highly uncertain (Tushman & Rosenkopf, 1992). For these reasons, new-technology companies are extremely risky. Such uncertainty makes external resource holders hesitant to provide resources to NTBVs, so they have difficulty in obtaining the requisite resources in the markets (Peneder, 2008). Given this situation, signaling theory researchers propose that the human capital of founders plays the role of a signal to attract venture capital (VC) investment, and that NTBVs that obtain VC investment can perform better than they would otherwise (Colombo & Grilli, 2007; 2009).

It is obvious that VC typically provides resources to NTBVs. However, a VC system is generally underdeveloped in developing countries. Furthermore, VC mainly provides financial resources due to the nature of their organizations and cannot provide other resources such as human resources, technology, or marketing. A business group (BG), meanwhile, is a respectable organization that can provide various resources including human resources, technology, or marketing as well as finance. Previous studies present the effects of the human capital of founders (Cassar, 2006) and alliances with respectable organizations (Chang, 2004; Powell, Koput & Smith-Doerr, 1996) on the growth of NTBVs. However, very few studies show how the human capital of founders influences an alliance with respectable organizations, and in turn how NTBVs in alliance with BGs grew more significantly.

The present study employs insight from human capital theory and signaling theory to address the research question, "to what extent does the human capital of founders in NTBVs attract alliance with BGs and facilitate growth." We use human capital theory (Piazza-Georgi, 2002) and signaling theory (Podolny, 2008) to develop hypotheses that predict the effect of different human capital factors on the alliance and growth of NTBVs. We then test these hypotheses using the Korea Securities Dealers Automated Quotations (KOSDAQ) database of NTBVs gone public between 2000 and 2005. This research set controls for a range of variables, enabling us to home in on human capital and signaling effects on alliances and growth.

Theory and Hypotheses

This section surveys the literature on human capital and employs signaling theory to propose how the human capital of founders might affect NTBVs' growth directly, how BGs might interpret signals of human capital, and how

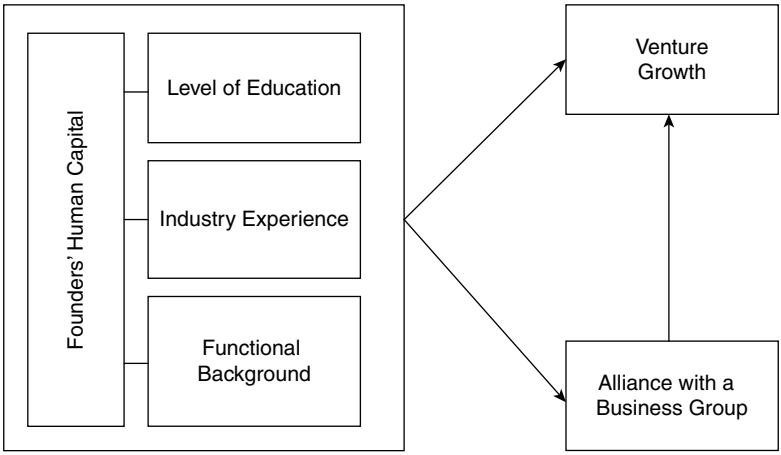

Figure 3.1 Theoretical model.

alliances with BGs might affect NTBVs' growth. We propose that the level of education, industry experience, and functional background of NTBVs' founders serve as a quality signal to BGs and enhance the chances of growth through their value in use. Our theoretical model of human capital effects on alliance with BGs and growth is displayed as Figure 3.1.

Founder's Human Capital and the Success of NTBVs in Developing Economies

Piazza-Georgi (2002) has defined human capital as "a stock of personal skills that economic agents have at their disposal." Rauch, Frese, and Utsch (2005) distinguished among three types of human capital: an individual's education, experiences, and skills that help in the tasks of getting one's work done. Other authors have distinguished between general and specific human capital, demonstrating the importance of the task context (Bosma, Van Praag, Thurik & De Wit, 2004).

Human capital attributes—including education, experiences, and skills—have long been argued to be a critical resource for success in entrepreneurial firms (Pfeffer, 1996). Human capital theory assumes that people attempt to receive compensation for their investments in human capital (Becker, 1964). Thus, individuals try to maximize their economic benefits, given their human capital. As a consequence, highly educated people may not choose to become entrepreneurs because entrepreneurship may very well lead to reduced income compared to other employment opportunities

(Cassar, 2006). However, once individuals have started up, those who have invested more in their human capital are likely to strive for more growth and profits in their business compared to individuals who have invested less in their human capital simply because they want to receive higher compensation for their human capital investments. Otherwise, highly educated entrepreneurs would choose to dissolve their firms and seek other, more lucrative employment opportunities (Gimeno, Folta, Cooper, & Woo, 1997). The arguments suggest that according to human capital theory, human capital leads to entrepreneurial success.

The magnitude of this relationship, however, remains unknown. While some authors argue that the relationship between human capital and entrepreneurial success is commonly overemphasized (Baum & Silverman, 2004), others argue that human capital constitutes one of the core factors in the entrepreneurial process (Haber & Reichel, 2007). An inspection of the literature shows that studies differ in their conceptualizations of human capital, their choices of success indicators, and their study contexts such as industry, country, and age of the business (Unger, Keith, Hilling, Gielnik, & Fresem, 2009). Thus, it remains unclear what kind of human capital should be related to success and under what circumstances. Surprisingly, to our knowledge, no study has systematically investigated mediators influencing the human capital–success relationship.

We suggest the following reasons for the positive relationship between the human capital of founders and the success of NTBVs. First, the relationship between human capital and success is higher in new technology. New-technology industries involve the use of sophisticated and complex technologies, and they typically require extensive knowledge and research in dynamic and uncertain environments (Utterback & O'Neill, 1994). Human capital should help particularly in such knowledge-intensive industries because knowledge and valid information reduce uncertainty associated with innovation and dynamic environments (McMullen & Shepherd, 2006).

Second, the relationship between human capital and success is higher for emerging businesses than for mature businesses. High human capital assists such owners to learn new tasks and roles and to adapt to new situations (Weick, 1996). In contrast, owners of mature businesses have a "track record," routines, and established practices they can refer to. Over the years, variables other than the owners' human capital may become more important.

Finally, the relationship between human capital and success is higher in less developed than in developed countries. In developing countries, human capital is more heterogeneous and scarcer than in highly developed

countries. Therefore, human capital is more likely to create competitive advantage in the developing world. While it is obvious that the human capital is important for the success of NTBVs, the magnitude of this relationship can still vary. Recently, relevant studies introduce the mediating role of resource holders to explain the magnitude of this relationship (Colombo & Grilli, 2005). NTBVs need large amounts of various resources such as financing, human resources, technology, and marketing to differentiate existing technologies and commercialize new technologies. So, it is very important for NTBVs to obtain the requisite resources from external resource holders. However, NTBVs involve not only the uncertainty that general ventures possess, but also additional uncertainty, for new technology is by its very nature highly uncertain. Undeveloped markets follow unforeseen turns; hyped-up technologies disappear far more often than they engender promised technological shifts; technologies obsolesce extremely rapidly; and unanticipated kinks derail once-promising development projects (Tushman & Rosenkopf, 1992).

For these reasons, new-technology companies are extremely risky. Such uncertainty makes external resource holders hesitant to provide resources to NTBVs, so they have difficulty in obtaining the requisite resources in the markets (Colombo & Grilli, 2007). Given this situation, signaling theory researchers propose that the human capital of founders play the role of signal to attract VC investment, hereby NTBVs that obtain VCs' investment can make higher performance than otherwise (Colombo & Grilli, 2007; 2009).

In developed countries, market-based transactions provide access to most needed elements of resources such as finances, human resources, and technology. Relatively efficient markets for capital and labor, easy access to complementary business services, and consistent enforcement of property rights as well as relatively corruption-free government permit individual entrepreneurs to raise capital, hire human resources, learn about customer demands, and play by the rules of the game. In developing countries, by contrast, where many of these institutions exist in relatively weak form, BGs control a substantial fraction of a country's productive assets and account for the largest and most visible of the country's firms. So they can contribute to innovation through intangible assets such as business reputation and government tie by substituting for functions that stand-alone institutions provide in developed countries (Teece, 1996).

In developing countries, there are very few competent VC firms. Furthermore, VC firms mainly provide financial resources due to the nature of their organizations and cannot provide other resources such as human resources or technology. BGs, meanwhile, are a respectable organization that can provide various resources including human resources, technology,

or markets as well as finance. Therefore, in developing countries, NTBVs can obtain their requisite resources by collaborating with BGs.

Why do BGs need to make alliances with NTBVs then? Strategy scholars have long emphasized the importance of complementary resources (Penrose, 1995), and have argued that firms tend to create value when partnering with firms that can complement weaknesses in capabilities (Teece, 1996). Although complementarity as a driver of alliance formation can be observed in a number of industry settings (Chung, Singh & Lee, 2000), alliances in new-technology sectors are best explained from a learning perspective (Dodgson, 1993). The most important motive for relationship learning is uncertainty in the environment (Selnes & Sallis, 2003). In other words, an organization builds a relationship to avoid environmental uncertainty. Organizations are motivated to make them concentrate on a joint study that alleviates the environment uncertainty. Therefore, the relationship not only adapts passively to a changing environment, but also develops competitive advantages in strategic interacts through cooperation and joint study (Dyer & Singh, 1998). To cope with uncertainty, innovative new technology development is of essence even to BGs that lead business. It is more effective for large firms to work together with NTBVs based on a strategic relationship rather than to develop new technology by themselves. In reality, technology innovation takes place more often in an alliance between BGs and NTBVs in industries that have high uncertainty (Powell et al., 1996).

What is the judgment criterion of BGs in evaluating potential capabilities of NTBVs? Because NTBVs lack a business track record, resource holders have high uncertainty in evaluating their potential capabilities. Just like VCs, BGs are business resource holders who take high risks for high returns. Therefore, BGs also have a lot of uncertainty in evaluating NTBVs potential capabilities.

More recently, scholarly attention has turned to a different kind of indicator of a young firm's quality and potential—the backgrounds of a firm's upper echelon. This work has built upon well-established research on the upper echelons of businesses that have traditionally been examined in well-established firms (Hambrick & Mason, 1984) and has extended it to the context of young firms. This more recent work finds that the composition of a young firm's board and top management team can positively affect its ability to attract important stakeholders and to perform well in the marketplace (Certo, 2003). For example, when top managers have prestigious backgrounds, firms receive more support from creditors (D'Aveni, 1990), enjoy enhanced IPO performance (Certo, 2003), and are more likely to secure endorsement of a prestigious underwriter (Higgins & Gulati, 2003).

The underlying mechanism proposed for these positive effects is the firm's signaling of legitimacy through the firm's upper echelons (Certo, 2003). In the context of alliances, this suggests that the structure or characteristics of the upper echelons of a firm may also affect a firm's ability to obtain alliances.

Indeed, prior research in the semiconductor industry has shown that entrepreneurial firms led by large, experienced, and well-connected top management teams form alliances at a higher rate (Eisenhardt & Schoonhoven, 1996). For NTBVs, in particular, the human capital of founders is a very important signal to attract financial resource holders, such as VC, who have a decisive effect on the survival and growth of NTBVs (Colombo & Grilli, 2009). Similarly, our study proposes that the human capital of founders would be a very important signal to attract business resource holders such as BGs, which have a decisive effect on the survival and growth of NTBVs in developing countries.

Founders' Human Capital, Firm Growth, and the Alliance with a Business Group

Considering the level of education level as an indicator of cognitive propensity, studies with a cognitive perspective suggest that the level of education is positively related to the receptivity of innovation (Guthrie, Grimm & Smith, 1991). Based on this, studies of top management teams propose that the amount, but not the type, of formal education of a management team will be positively associated with innovation (Bantel & Jackson, 1989; Hambrick & Mason, 1984).

However, there is no consistent correlation between the educational level of founders and the performance of ventures. Roberts (1991) suggested an inverted-U-shaped relationship between new venture performance and educational level, with performance (whether measured by survival or growth) increasing to Master's degree level, then dropping at the PhD level since highly academic people are mainly oriented toward research. Stuart and Abetti (1988) also found that entrepreneurs with PhD degrees performed less well than those with Master's degrees. However, Roberts (1991) noted an industry-specific exception to his finding: In bio-science, an emergent industry at the time, founders with a PhD appeared to be more successful (Podolny, 2008).

As the effect of educational level on the performance of a venture can vary depending on the characteristics of the business environment, it is necessary to consider the situation in any empirical study (Honig, 1998). It requires an innovative strategy in order to make high performance in

highly uncertain environments like a new technology sector (Scherer & Ross, 1990; Zahra & Bogner, 2000). Therefore, in NTBVs, the higher the educational level of founders, the faster the ventures managed by those founders would grow.

Hypothesis 1: NTBVs managed by founders with a high educational level are more likely to grow faster.

In new technology sectors, BGs partner with NTBVs in order to utilize capabilities that BGs either partly or completely lack. The bigger BGs get, the more bureaucratized and less innovative they become. So, in new technology sectors, BGs need to supplement their innovative capabilities through NTBVs in the form of an alliance. For this, it is very important for BGs to judge the NTBVs' innovative capabilities in order to make the alliance with NTBVs successful. However, BGs have difficulties in evaluating the innovative capabilities due to the lack of a track record of NTBVs. Given this situation, the high educational level of founders of NTBVs can be a signal that the NTBVs have high innovative capabilities compared to BGs.

Hypothesis 2: NTBVs managed by founders with a high educational level are more likely to collaborate with BGs.

Human capital studies maintain that the experience of managers can be potential assets for firms. However, prior experience of the founders relevant to their industry is very important for the success of new ventures (Colombo & Grilli, 2005). The relevant industry experience of top managers facilitates not only the obtaining of information and knowledge about suppliers, customers, opportunities, threats, competition, and regulations, but also the networking that they need for their survival (Kor, 2003). It is difficult to obtain these skills and knowledge in the field of information technology because the sector itself is at the initial stage of distribution of relevant information and knowledge. Also, there are very few top managers with relevant industry experience, so this can be a competitive asset that competitors cannot imitate, for they cannot be obtained easily in the market (Kor, 2003).

Because NTBVs lack legitimacy and their businesses have a lot of uncertainty, they have difficulty in establishing relationships with suppliers or customers in their industries. Given this situation, the relevant industry experience of founders can facilitate the establishing of relationships with suppliers or customers, which, in turn, decrease the hazard of failure (Cooper, Gimeno-Gascon, & Woo, 1994; Stinchcombe, 1965). Studies maintain that founders without relevant industry experience increase the risk of failure, especially in the new technology sectors, and, conversely, relevant industry experience of the founders positively influences the growth of ventures (Colombo & Grilli, 2005; Cooper et al., 1994).

Hypothesis 3: NTBVs managed by founders with relevant industry experience are more likely to grow faster.

In new technology sectors, BGs expect NTBVs to have information and knowledge that BGs lack. Studies maintain that the firms whose founders have relevant industry experience have a lot of information and knowledge about the industry and are more likely to make joint R&D successful (Cooper & Bruno, 1977; McGee & Michael, 1994). So, in new technology sectors, BGs want to obtain information and knowledge from NTBVs in the form of an alliance. For this, BGs should judge the NTBVs' specialty in the sector in order to make the alliance between BGs and NTBVs successful. However, it is very difficult for BGs to evaluate the specialty because NTBVs lack a track record. Given this situation, relevant industry experience of the founders of NTBVs can be a signal to BGs that the NTBVs have industry specialty that the BG lacks.

Hypothesis 4: NTBVs managed by founders with relevant industry experience are more likely to collaborate with BGs.

The skill that founders possess can be explained by their functional background. The functional background orientation may not dominate the strategic choices an executive makes, but it can be expected to exert some influence. For example, Dearborn and Simon (1958) found that when a group of executives from different functional areas was presented with the same problem (a case study) and asked to consider it from a company-wide perspective, they defined the problem largely in terms of the activities and goals of their own areas. Functional backgrounds have been classified into three categories, the first two of which are based on an open-systems view (Katz & Kahn, 1978) and also align with the functional areas described in Miles, Snow, Meyer, and Coleman (1978). "Output" functions, that is, marketing, sales, and product R&D-emphasized growth and the search for new domain opportunities, are responsible for monitoring and adjusting products and markets. "Throughput" functions, that is, production, process engineering, and accounting, work at improving the efficiency of the transformation process. A third functional classification was suggested by Hayes and Abernathy (1980), who documented that major firms are increasingly dominated by executives whose backgrounds are in areas such as law and finance, which are not integrally involved with the organization's core activities.

Among the three areas, the former two areas are somewhat distinct in their emphasis, and individuals who work within them are likely to develop distinctly different orientations to the firm and its environment (Lawrence & Lorsch, 1967; Miles, Miles, & Snow, 2005). Based on this, Hambrick and Mason (1984) propose that the degree of output function experience of top managers will be positively associated with strategies such as product

innovation, related diversification, advertising, or forward integration that emphasize growth. Hambrick and Mason (1984) proposed that in turbulent, differentiable industries, output function experience would be positively associated with profitability. Murray (2004) emphasizes the importance of human capital in R&D by suggesting the contribution of scientists. Previous studies maintain that the R&D experience of founders influences the survival and growth of NTBVs (Colombo & Grilli, 2009; Roberts, 1991). In particular, Colombo and Grilli (2005) argue that R&D or marketing experience positively influences the growth of NTBVs. Because NTBVs run their businesses on the base of new technologies and markets, they require more R&D or marketing abilities of founders than general ventures.

Hypothesis 5: NTBVs managed by founders with an output function background are more likely to grow faster.

New technology sectors are characterized by emerging technologies and markets. So there are challenges related to R&D and markets that should be resolved in order to be competitive. BGs also face these problems. They expect NTBVs to have the problem-solving capabilities in R&D or marketing that BGs lack. So, BGs should learn problem-solving capabilities from NTBVs in the form of an alliance in new technology sectors. For this, BGs would judge the problem-solving capabilities of NTBVs in order to make the alliance between BGs and NTBVs successful. However, BGs have trouble in evaluating the problem-solving abilities because of lack of track record of NTBVs. Given this situation, the output function background of founders of NTBVs can be a signal that the NTBVs have R&D or market problem-solving abilities to BGs.

Hypothesis 6: NTBVs managed by founders with an output function background are more likely to collaborate with BGs.

The Mediating Role of the Alliance with a Business Group

Relevant studies have two perspectives on ways that alliances with BGs facilitate the growth of NTBVs. First, through a strategic alliance, the large firm is the resource holder that provides resources to venture companies. Venture companies must take care of technology competitiveness and marketing factors to establish a market bridgehead. In line with this thinking, BGs that have strong brand and financial power can provide a sales route to NTBVs that have limited resources. BGs provide instructions for advancing and productivity, and sometimes even arrange funding for NTBVs (Powell et al., 1996). This support from BGs has a positive effect on NTBVs' performance. Moreover, many studies show that the strategic alliance influences positively the various performances of NTBVs. For example, Shan, Walker,

and Kogut (1994) show that biopharmaceutical ventures' cumulative cooperative ties positively influence on their performance as measured by patent outputs. Stuart and Abetti (1988) show that number of technology alliances of ventures and innovativeness of their partners positively affected patent and sales growth rates. Chang (2004) maintains that as alliance network size of internet ventures is larger, the time to IPO becomes shorter.

At the same time, strategic alliances between venture companies and BGs induce the resource supply from passive resource possessors, and consequentially venture companies can replenish necessary resources and create good output. Since venture companies do not have enough of a record, the social structure of a business relationship can influence their business value. Therefore, it is very important that venture companies have a business relationship with a highly reputable partner since this is a very important factor for evaluating the possibility of success (Aldrich & Fiol, 1994; Zimmerman & Zeitz, 2002). By establishing a strategic alliance with a highly reputable partner, venture companies can receive the benefit of the reputation and induce resources from the possessors. Stuart, Hoang, and Hybels (1999) and Stuart (2000) argue that the reputation of strategically allied partners provide the endorsement. Stuart et al. (1999) argue that as the uncertainty of ventures increases, the endorsement effect that strategic alliances provide increases. Furthermore, Chang (2004) shows that, in the internet industry, the reputation of the alliance partner of the ventures provides the role of endorsement. Especially, Podolny and Stuart (1995) argue that if BGs adopt some new technology, it can be widely used by achieving social recognition.

In a sense, BGs can be defined as business partners with a good reputation. They often control a substantial fraction of a country's productive assets and account for the largest and most visible of the country's firms (Granovetter, 1995; Khanna & Palepu, 1997). In particular, unlike in developed countries, because BGs fill the gap left by market failure they can provide resources for the innovation of ventures and thus influence the survival and growth of ventures. Therefore, due to high uncertainty of NTBVs, resource holders have difficulties in evaluating the value of NTBVs directly and thus are reluctant to provide their resources. Given this situation, alliances with BGs play the role of endorsement to make resource holders positively evaluate the potential of survival and growth of NTBVs. This endorsement induces resource holders to provide their resources to NTBVs and consequently perform well.

As we suggest, the human capital characteristics of founders would influence the growth of NTBVs and lure alliances with BGs. Furthermore, relevant studies maintain that BGs provide their tangible and intangible

resources to NTBVs and induce passive resource holders to provide their resources, and so, in turn, NTBVs can acquire the necessary resources they need to perform well. Therefore, we raise the possibility of a link between the human capital characteristics of founders and the subsequent alliance formation with a business group, facilitating the growth of the NTBV.

Hypothesis 7: NTBVs managed by founders with a higher educational level can grow faster by collaborating with a business group.

Hypothesis 8: NTBVs managed by founders with the relevant industry experience can grow faster by collaborating with a business group.

Hypothesis 9: If NTBVs managed by founders with an output function background can grow faster by collaborating with a business group.

Data and Methods

Data Collection

The original target research sample consists of 1,253 KOSDAQ (Korea Securities Dealers Automated Quotation) stock market listed firms from July 1, 1996 to December 31, 2005. Data were collected from DART (Data Analysis, Retrieval and Transfer System), which is an electronic disclosure system that allows companies to submit disclosures online (www.dart.fss.or.kr). We supplemented the database with diverse approaches such as newspaper articles, publications, corporate homepages, and phone calls to the firms.

To define our final sample for analysis, we had to consider changes in economic conditions at the turn of the century. We first limited samples to IT firms founded after 1990, because business ventures in Korea have developed as the IT industry has expanded quickly during 1990s (Chung & Choi, 2008). The Korean government had consistently loosened the listing requirements for the KOSDAQ market to encourage the provision of listed firms from July 1996 when the KOSDAQ stock market opened.

But, by the early 2000s, the KOSDAQ market had collapsed. With rapid market readjustment, IT firms faced a dramatic drop in stock prices. Internet companies were hit hardest elsewhere. Moreover, market factors were aggravated due to insufficient restructuring, misdeeds of venture managers, and unfair trading in the KOSDAQ market. With the overall venture industry experiencing a dramatic shakeout, the government raised the registration standards for the KOSDAQ market (Lee, 2002). The KOSDAQ market was under-valued from July 1, 1996 to late 1998 due to the so-called IMF financial crisis and the bursting of the dot-com stock market bubble from early 1999 to the first half of 2000. Thus, we also limited samples to

the firms that went public after July 1, 2000, to eliminate the unusual bias caused by these dramatic changes in market conditions. After eliminating firms of which the CEO is not a founder or a major shareholder, we came up with the final sample of 170 KOSDAQ-listed firms for analysis.

Measures

Dependent Variables

Strategic Alliance with a BG Korean commercial law defines about 900 firms with assets of over 2 trillion won as a business group. More generally, they regard the 30 largest firms ranked by assets as so-called Chaebols, announced by the Fair Trade Commission from 1995 to 2005. A strategic alliance with a BG includes supply agreements, joint R&D, share participation, and joint ventures. We define large companies as the 30 largest firms ranked by assets. This research defines a BG as an enterprise among the 30 largest firms as declared by the Fair Trade Commission. We use a binary variable to measure a strategic alliance with a BG that takes on the value of 1 if allied with BGs (strategic alliance with BG = 1) and 0 otherwise (no strategic alliance with BG = 0).

The Growth of NTBVs NTBVs exploit business opportunities with differentiated technology in areas of rapid technological change. NTBVs are under a higher level of uncertainty than existing firms, thus, they lack sufficient financial resources for R&D and marketing compared to existing firms. An IPO allows a firm to tap a wide pool of investors to provide it with capital for future growth, repayment of debt, and/or working capital. And once a firm is listed, they are able to enhance their reputation by introducing the firm's value outside of the firm. But, IPO firms sometimes exhibit a decline in post-issue operating performance because there is potential for higher agency conflicts, lower ownership retention, and IPO expenses (Degeorge & Zeckhauser, 1993). Despite these drawbacks, NTBVs have no choice but to implement IPOs as a crucial strategy and try to reduce the time required to IPO. Researchers thus adopt the IPO event as a measure for the rate of the NTBVs' growth (Chang, 2004; Stuart et al., 1999). The time to IPO is measured by months since the date of founding. We take the logarithm of this variable for the adjustment of scale.

Independent Variables

A founder's level of formal education is calculated based on a classification of the founder's information according to two levels. The higher level is a master's or a doctorate degree. The lower level is an undergraduate degree

or lower. The previous work experience takes on the value 1 if a founder has worked in a related industry before and 0 otherwise. The functional background takes on the value 1 if a founder's undergraduate major or career experience is in output functions and 0 otherwise.

Control Variables

Industry Subtype Characteristics Characteristics of industry subtypes affect venture firm's time to IPO (Chang, 2004; MacMillan, Siegel, & Narasimha, 1985; Stuart et al., 1999). The market stage also influences alliance formation (Eisenhardt & Schoonhoven, 1996). We defined an IT firm as the firm assigned an IT index when listed on KOSDAQ. IT KOSDAQ index classifies communications and broadcasting, IT software, and IT hardware. Communications and broadcasting includes communications and broadcasting services. IT software covers internet, software, computer services, and digital contents, whereas IT hardware covers communications equipment, IT equipment, and semiconductor, and components.

Stock Market Conditions Stock market conditions influence the time to IPO (Chang, 2004; Stuart et al., 1999). Founders and financial investors tend to decide to go public because high subsequent investment returns are expected from the buoyant stock market for IPOs. The IPO process in Korea usually takes 3 months. We thus measure the stock market condition as the composite stock exchange index of KOSDAQ from 3 months before the IPO date.

Firm Size We control for firm size. Firm size is used to account for the greater resources and choices available to larger firms with a greater ability to invest in technology and innovation as well as potential scale advantages (Scherer & Ross, 1990). We measure firm size as the log (10) of yearly sales just before the IPO.

Venture Capital (VC) Previous research suggested that the investment of VC affects the time to IPO. Gompers and Lerner (2001) argue that venture firms that have obtained VC investment go public faster than firms without VC investment. Venture firms endorsed by VC can secure additional financial resources at a proper time, thus they can grow relatively faster. In addition, venture firms endorsed by VC attain rapid growth, because VC often helps venture firms by providing nonfinancial resources such as marketing support, managerial advice, human resources supply, and alliance arrangements with potential customers and suppliers, all of which can increase the chance that these start-ups become successful. An

endorsement by a respectable VC investor also signals the quality of a venture firm. By doing so, the endorsing organization's legitimacy carries over to the recipient, providing it credibility, contact, and support for the founders, building a start-up's image, and facilitating the start-up's access to resources. Therefore, the reputation of VC helps venture firms go to IPO faster (Gompers, 1996). We use a binary variable to measure VC support that takes on the value of 1 if it received VC (VC investment = 1) and 0 otherwise (no VC investment = 0).

Results

Descriptive Statistics and Correlations

Table 3.1 presents means, standard deviations, and correlations for the measures. VIFs (variance inflation factors) for all the regression models are less than 2, which are well below the guideline of 10 recommended (Chatterjee & Hadi, 2006).

The features of the sample firms are described as follows. The yearly sales just before the IPO are 315 billion won on average and we can tell those firms are SMEs. In the IT industry, less than 1 percent of firms are in communications and broadcasting, 47 percent of the firms are in the IT software (internet, software, computer services, and digital contents), and 49 percent of the firms are in IT hardware (communications equipment, IT equipment, semiconductors, and components). A total of 75 percent of the firms obtained VC investment and 51 percent of the firms had alliances with BGs.

For the independent variables, the founders with a master's or doctoral degree are 29 percent, with an output background are 46 percent, and with related industry experience are 45 percent. The dependent variable, the time to IPO, is 6.2 years on average.

Main Analysis

Survival Analysis (Hypotheses 1, 3, 5, and 7–9)

Survival analysis was employed to test hypotheses 1 through 3, and 7 through 9. We use the time to IPO as a dependent variable. A longitudinal statistical analysis method may be used in the analysis of both qualitative and quantitative data (Tuma & Hannan, 1984). The dependent variable of this analysis method is the time to the occurrence of an event or the rate of an event occurring that a researcher is interested in. This study adopts the Cox regression model, which is a widely used statistical model to investigate the complex relationship between survival time and other factors.

Table 3.1 Descriptive statistics and correlations

	Variables	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1	IT software	.47	.50										
2	IT hardware	.49	.50	−.93**									
3	Communications & Broadcasting	.04	.19	−.18*	−.19*								
4	KOSDAQ market index	705.41	232.91	.10	−.09	−.02							
5	Yearly sales just before the IPO	315.73	368.38	−.04	.09	−.13	−.03						
6	VC investment	.75	.43	−.01	.05	−.11	−.04	−.03					
7	Level of education	.29	.46	−.07	.09	−.05	.03	.11	.01				
8	Related industry experience	.45	.50	.01	.01	−.04	−.09	−.10	.16*	.02			
9	Output function background	.46	.50	−.09	.11	−.05	−.07	−.02	.09	.16*	.29**		
10	Alliance with a business group	.51	.50	.00	.02	−.07	−.10	−.07	.12	−.04	.33**	.33**	
11	Time to IPO	6.20	2.46	−.10	.04	.17*	.05	.04	−.27**	−.04	−.31**	−.32**	−.65**

N = 170

*$|P| < 0.05$

**$|P| < 0.01$

Logistic Regression (Hypotheses 2, 4, and 6)

Logistic regression was employed to test hypotheses 4 through 6. We added the alliance with a BG as a dependent variable. We conduct logistic regression because the dependent variable is measured not on a quantitative scale, but on a qualitative scale. The binary variable of the alliance with BG follows binominal distribution, not normal distribution.

To test the mediating role of the alliance with a BG, the present study adopts the four steps of Baron and Kenny (1986). They suggest four steps to establish mediation. As figure 3.2 shows, step 1 requires that the independent variable is significantly related to the dependent variable; step 2 requires that the independent variable is significantly related to the mediator; step 3 requires that the mediator affects the dependent variable while controlling for the effect of the independent variable. And, finally, when these conditions are satisfied, step 4 requires that the effect of the independent variable on the dependent variable is insignificant when controlling for the mediator in order to indicate complete mediation; otherwise partial mediation is indicated. The effects in both steps 3 and 4 are estimated in the same regression equation.

Model 1 tests the relationship stated in Hypotheses 1, 3, and 5, which explain control variables, independent variables of a founder's human capital, and the dependent variable of time to IPO. Among the control variables, the effect of industry subtype characteristics, stock market conditions, and firm size on time to IPO is not significant. However, the effect of VC investment on the time to IPO is negatively significant as expected ($\beta = -0.477$; $|P| < 0.05$). The relationship between related-industry experience of a founder and time to IPO is negatively significant at $\beta = -0.503$, $|P| < 0.01$, supporting hypothesis 3 and the interaction effect between output functional background of a founder and time to IPO is negatively significant at $\beta = -0.692$, $|P| < 0.01$ supporting hypothesis 5. However, the relationship between level of education of a founder and time to IPO is not significant, failing to support hypothesis 1.

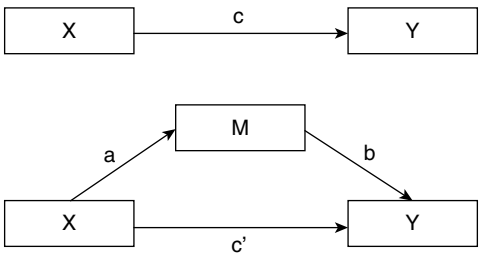

Figure 3.2 Mediation model.

Table 3.2 Results of regression analyses

	Model 1 time to IPO	*Model 2 alliance with BG*	*Model 3 time to IPO*
Constants		−.873**	
Control variables			
IT S/W	−.152	.048	−.116
IT H/W			
Communications and broadcasting	.555	−.620	.337
KOSDAQ index	−.428		−1.424
Sales	−.905		−.016
VC investment	−.477*		−.439*
Independent variables			
High academic degree	.003	−.483	.021
Prior experience in a related industry	−.503**	1.155**	−.345*
Output functional background	−.692**	1.235 **	−.477**
Mediating variable			
alliance with BG			−1.500**
-2Log Likelihood	1365.969	202.643	1303.574
Chi-square	49.003**		120.199**
Cox and Shell R^2		.176	

N = 170

*$|P| < 0.05$

**$|P| < 0.01$

Model 2 tests the relationships stated in hypotheses 2, 4 and 6, which explain control variables, independent variables of a founder's human capital, and the dependent variable of an alliance with a BG. The effects of control variables are not significant. The interaction effect between related-industry experience of a founder and alliance with a BG is positively significant at $\beta = 1.155$, $|P| < 0.01$, supporting hypothesis 4, and the interaction effect between output functional background of a founder and alliance with a BG is positively significant at $\beta = 1.235$, $|P| < 0.01$ supporting hypothesis 6; however, the interaction effect between level of education of a founder and alliance with a BG is not significant, failing to support hypothesis 2.

In the final step of the mediation analysis, NTBV growth was regressed on founder's related-industry experience and output functional background, alliance with a BG, and the control variables. Model 3 indicates that the negatively significant relationship ($\beta = -0.503$, $|P| < 0.01$) between related-industry

experience and time to IPO becomes weaker ($\beta = -0.345$, $|P| < 0.05$) when the alliance with a BG ($\beta = -1.500$, $|P| < 0.01$) is entered into the equation. Also, the negatively significant relationship ($\beta = -0.692$, $|P| < 0.01$) between output functional background and time to IPO becomes weaker ($\beta = -0.477$, $|P| < 0.01$) in the same manner. As a conclusion, the alliance with a BG has a partial mediating effect on the relationship between related-industry experience and output functional background and time to IPO. Hypotheses 8 and 9 were supported.

Discussion

The core of our tested models can be recapitulated as follows: (1) founders' human capital influences NTBV's growth; (2) founders' human capital influences the likelihood of an alliance with a BG; and (3) an alliance with a BG may have significant effects on a firm's growth. Founders' prior work experience in a related industry and output functional background results in superior NTBV growth and alliance with BG, whereas founders' academic background has no effect on the firm's growth and alliance with BG.

Literature often suggests that the level of education is beyond major positively related to the receptivity of innovation (Guthrie et al., 1991). We, thus, maintain that the innovative propensity of founders in the situation of NTBVs can provide a positive signal to BGs that consider an alliance with them, which in turn facilitates the growth of NTBVs. Our statistical analysis, however, shows that founders' academic background has no significant effect on the BG's alliance partner selection. Founders' previous work experience in a related industry and output functional background, however, do have a statistically significant signaling effect in a BG's decision when selecting an alliance partner.

Some research findings are consistent with those statistical results. Gimmon and Levie (2009) argue that a founder's advanced academic background has no significance on the survival of NTBVs. While, Colombo and Grilli (2005) suggests that an education in economics/management or science/engineering influences positively the growth of NTBVs. These arguments imply that founders' related industry knowledge and skill from the output functional background are more significant factors in NTBV performance than the academic background. These empirical results suggest that a founder's specific knowledge and skill through relevant industry experience and output function background have a critical impact on the growth of NTBVs, but that academic background does not.

However, empirical studies are inconclusive. Contrary to this result, Gimmon and Levie (2010) argue that a founder's advanced-level academic

background lures venture capital's investment. Such conflicting results can be explained by the differences between the strategies of BGs and venture capital. While VC's financial purpose is to maximize their capital gain from investment, a BG's alliance partnership with an NTBV is for the purpose of cultivating a new business by developing innovative technologies with the NTBV. BGs prefer the information and knowledge that founders possess through relevant industry experience and the functional ability that founders have through an output functional background to innovative propensity that is not specific. Economists assume that diversified BGs can only exist in the absence of a well-functioning market. Thus, BGs would be more important in emerging economies. In emerging economies, the BGs provide intangible resources such as human resources, technologies, and marketing as well as financial resources for NTBVs through alliances. In turn, alliances with BGs can facilitate the growth of NTBVs.

Conclusions

Theoretical Implications

We contribute to theory and literature on entrepreneurship and strategy in emerging economies by developing and testing a mediating model that provides an explanation of the NTBV performance relationship. First, an area in which we found greater promise for improved NTBV performance was that of human capital. We investigated several variables of founder's human capital that positively influence NTBVs' performance. Founders' concrete knowledge or specific functional background is important for NTBV growth rather than their abstract propensity.

Second, from a signaling theory perspective, it is important to understand the resource providers that lure the third-party resource holders as a linkage between founders' human capital and the NTBV growth in emerging economies. This study found that founders' concrete knowledge or specific functional background is more influential on attracting an alliance with a BG than their abstract propensity. This study also investigates the mediating role of BGs for the growth of NTBVs in an emerging country. Because there is market failure in emerging countries, BGs provide various kinds of resources to NTBVs and play the role of a positive signal to other resource holders.

Limitations

Some limitations of this study, along with directions for future research, are also worth noting. First, we adopt time to IPO as a measure for venture performance. Related research measures the time to IPO as the indicator of

NTBV's growth (Chang, 2004; Stuart et al., 1999). We believe this event is a meaningful interim measure of an NTBV performance because plenty of financial resources are required to maintain venture firm consistency. This measure is not perfect since not all the ventures decide to go public. Thus, we acknowledge the limitation in using time to IPO as a performance indicator.

Second, we believe that further examination regarding the NTBV founders' social capital is warranted to better understand the implications of the signaling mechanism. Prior research shows that the social capital of startups within the framework of the governmental incubator program seems to be weak, as indicated by the nonsignificant effect of social capital for attracting outside resources (Honig, Lerner, & Raban, 2006). However, from a differentiated perspective on social capital, it is required to investigate the signaling effect of other variables such as reputation and prestige (Harrison, Cooper, & Mason, 2004). This suggests that an examination of the moderating role of school prestige on the signaling mechanism of the educational level of founders.

A further limitation regards limited variables explaining founders' human capital. The various types of human capital, such as entrepreneurial mindset, and learning ability can be understood as firm resources applying signaling theory. Baumol (2009) casts doubt on the proposition that a higher level of technical education will bring more entrepreneurial thinking and learning abilities. Future studies would benefit from considering those variables in order to assess if links to the various types of human capital affect performance as a firm develops.

Finally, using diverse dependent variables would significantly improve our understanding on the signaling mechanism of founders' human capital. This study adopts time to IPO as a dependent variable to investigate the signaling effect of founder's human capital. Prior research measuring NTBV performance with market value in the course of IPO as well as time to IPO (Stuart et al., 1999) has shown that the influence of resource holders' signaling mechanism on time to IPO and firm value evaluation are differentiated. Time to IPO is a firm performance indicator and this suggests that for resource holders, including VC and BGs, who provide resources for firm growth, it may serve an important role as a signal of promising performance in the growth stage of ventures, while market value at IPO can be used to measure how the ventures are valued in the IPO process. Prior studies argue that underwriters, institutional investors, and individual investors act as a signal and so influence market value at IPO (Megginson & Weiss, 1991). These signaling effects may be helpful to new ventures that have not yet proven to be viable. Further study is thus necessary in order for us to

understand the exact nature and extent of these relationships. Specifically, further investigation is needed to test the signaling effect of founders' human capital and the alliance with a BG with good reputation on the evaluation of NTBVs at IPO.

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CHAPTER 4

Bridging Human Capital and Social Capital Theories

Deepali Sharma

Introduction

Human and social capital have elicited notable attention of research scholars in various disciplines such as sociology, economics, finance, political science, behavioral science, human resource management, and organizational theory in their quest for answers to a broadening range of questions in their own fields. The primary reason for this attention is an increasing awareness of the fact that human resources and their interrelationships are crucial for the performance of any entity, be it a firm, nation, economy, or the global economy. In their search, scholars tried to gain an objective understanding of these concepts and compare these soft forms of capital to the traditional notion of capital as a factor of production in economics. In economics, capital is a purposive action, an investment of resources with expected returns in the market place. Economic capital is a resource that is processed twice. In the first process, resources are produced or altered as an investment and in the second process, the produced or altered resources are deployed in the market place to earn profit (Lin, 2002). Drawing from this definition of economic capital, human capital would be, in simple terms, an investment in individual knowledge and skills with expected returns in the market place. Similarly, social capital would be an investment in social relations with expected returns in the market place.

However, these terms have received wider interpretations in the social sciences where human capital has been defined as a full range of knowledge, skills, and abilities an individual can use to produce a given set of outcomes (Hitt et al., 2001), and includes accumulated work, other habits, and health (Becker, 1993). It is created by changes in the skills and capabilities of people enabling them to act in new ways (Coleman, 1988). The widest interpretation portrays social capital as an asset embedded in relationships of individuals, communities, networks, or societies (Nahapiet & Ghoshal, 1998; Burt, 2000). Putnam notes, "By analogy with notions of physical capital and human capital—tools and training that enhance individual productivity—'social capital' refers to features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (1995:67).

Given the turbulent external environment surrounding most of the firms, there is a discernible shift away from a focus on physical capital to managing knowledge and learning as a key strategic priority. Knowledge productivity, innovation, and learning have become the focal point in today's knowledge economy, which largely depends on human resources, their synergies, and built-in complementarities. In today's knowledge-based era, quality of employees make the scarce strategic resource that allows one company to surpass its competitors (Garavan et al., 2001). Resource-based theorists view human resource as a valuable, rare, inimitable, and nontransferable resource that forms the basis for the core competencies of an organization that renders a sustainable competitive advantage (Prahalad & Hamel, 1990; Barney, 1991; Cappelli & Singh, 1992; Mahoney & Pandian, 1992; Barney & Wright, 1997). Human resources have been empirically found to contribute toward individual and organizational outcomes such as a higher performance, higher individual and organizational problem solving, enhanced career plans, enhanced opportunities for employability, sustained competitive advantage for firms, and regional development (Garavan et al. 2001; Crook et al. 2011; Gennaioli et al. 2013).

The changes in work design from individualized jobs in functionalized structures to teams embedded in complex work flow systems have made the complementarities between human capital and social interrelationships vitally important (Kozlowski & Ilgen 2006; Mackey et al. 2013; Wright et al. 2013). There is a pressing need to study the socialized view of human capital with an explicit integration of human capital and social capital theory (Nyberg et al. 2014). Some steps in this direction are indicated by recent studies in Strategic Human Resource Management (SHRM) literature where authors have paralleled complementarities in human resources with the embedded assets of social capital theory (Campbell et al., 2013) and

individual firm-specific human capital with the centrality of individuals in a network (Grigoriou & Rothaermel, 2013; Tzabbar & Kehoe, 2013). These studies identify human capital to be made up of two components: one is specific to the individual and the other is specific to colleagues within their organization (i.e., the component of social capital embedded in relationships of employees with colleagues). In recent studies scholars have been more comprehensive in their expressions by coining terms like "intellectual capital" comprising of three types of assets: human capital representing competencies, tacit experiences, and the overall knowledge-base of individuals in an organization; relational capital, which is the knowledge embedded in relationships with customers and suppliers, and structural capital encompassing nonhuman storehouses of intangible value in the firm like organizational routines, electronic documents, software programs, and databases and files (Bontis & Serenko, 2009).

This study endeavors to bring a clear understanding of the first two concepts—human and social capital—based on their conceptualization in various streams of literature[1] to tease out conceptual similarities and differences between them and identify definitive links between activities that empower individuals and increase the stocks of human capital to the generation of social capital and vice versa. This study aids corporate practitioners to build human and relational resources in their firms, which are valuable, rare, inimitable, and nonsubstitutable resources for gaining a sustainable competitive advantage. This would support pure theorists in the field of strategic human resources management, organizational theory, resource-based theories, and dynamic capabilities, and so on to build multilevel and multidisciplinary theories. The broader objective of this effort is to help policy. The model proposed in this chapter will aid policy makers in designing effective and focused policies since human and social capital development have been empirically established to enhance community and societal developments (Glaeser et al., 2002; Gennaioli et al., 2013).

Human Capital: Concept and Genesis

Evolution of the Human Capital Theory

The concept of human capital dates back to eighteenth century when Adam Smith in his seminal book *The Wealth of Nations* identified that all "the acquired and useful abilities" of individuals act as a source of "revenue or profit" (1976). The contemporary understanding of human capital is owed to the independent works of Johnson, T. W. Schulz, Jacob Mincer, and Gary Becker who presented workers as assets and conceived them as capitalists,

that is, owners of the capital of skills and knowledge having an economic value (Schultz, 1961; Lin, 2002; Nafukho et al., 2004; Zula & Chermack, 2007). In this work, human capital is conceptualized as the knowledge, information, ideas, skills, and health of individuals (Becker, 1964), which forms one of the basic factors of production (Schulz, 1961). This was a significant shift from the prevailing understanding of land, labor, capital, and management as traditional factors of production. It was observed that increase in national output were much larger than increases in land, man hours, and physical reproducible capital, which could be explained by investments in human capital that add value to the worker as he gains knowledge and skills (Schultz, 1961; Becker, 1993; Nafukho et al., 2004; Zula & Chermack, 2007). Education and training were found to be the most important investments in human capital as they could justify an individual's higher earnings since they were more qualified. Becker empirically established that individuals make a rational decision while investing in education, training, and other additions to knowledge and health by weighing the benefits and costs. Investments are made up to the point where the returns in extra income are equal to the costs of participating in education. Returns are both private to the individual in the form of additional income and to the general society in the form of greater productivity provided by the educated (Becker, 1993; Becker, 2009).

Understanding Human Capital

Various interpretations of human capital given by early economists point to the idea that human capital is an investment in education and training with expected economic and social returns (Nafukho et al., 2004). While these interpretations may look simple, the characteristics and attributes of an individual that are to be included in human capital are still debatable. The simplistic concept of human capital considers knowledge, information, ideas, skills, and the health of an individual as human capital while the more comprehensive view argues for the inclusion of behavioral aspects like accumulated work and other habits including drug addiction (Becker, 1993). Thus, the characteristics that can be considered as human capital fall into two extremes; at one end there are stable or difficult to change characteristics like intelligence, personality, and physical attributes while at the other end are malleable or easier to change characteristics like affect or behavior. The intermediate characteristics include knowledge and skill that are changeable but remain quite stable once acquired (Wright et al., 2013).

There is a consensus among scholars on the inclusion of core characteristics like knowledge, skills, education, and experience in human capital but

ambiguity regarding the inclusion of other behavioral characteristics like motivational traits, need for achievement, and conscientiousness. Those who consider the inclusion of behavioral traits argue that their exclusion would not be able to explain the reasons behind the difference in the performance of individuals with same levels of knowledge and skills, which they claim is due to behavior and attitude. As an example they cite the turnaround by Continental Airlines where on-time performance bonuses raised the company from the bottom to the top of the industry. Wright and McMahan (2011) therefore suggest that motivation can bridge the gap between skills and behavior.

The second major distinction regarding human capital relates to the generalizability of human capital across organizations. Becker (1993: 393) notes, "By definition, firm-specific knowledge is useful only in the firms providing it, whereas general knowledge is useful also in other firms." While this distinction implies some sort of dichotomy, it is argued that all human capital characteristics can be arranged along a general to specific dimension such that few, if any, human capital is purely general or purely specific (Wright & McMahan, 2011).

Human capital is identified with four key attributes: flexibility and adaptability; enhancement of individual competencies; the development of organizational competencies; and individual employability (Garavan et al., 2001). These attributes generate a range of positive individual and organizational outcomes, since the assets that individuals bring to an organization are intangible, premised on an individual's tacit knowledge rather than explicit, explicated, formal, routine, and standardized knowledge. Human resources become attuned to their organizational culture and norms over time and acquire the knowledge of organization-specific systems and processes to create firm-specific human capital that is valuable to the firm, inimitable by others and nonsubstitutable, which renders a competitive advantage to the firm. (Barney, 1991; Pfeffer, 1995; Barney & Wright, 1997; Garavan et al., 2001;Wright et al., 2001).

Like individuals, organizations also consider investments in human capital to be important. Literature that links the human capital theory with human resource management and organizational performance reports that organizations are constantly looking for strategies to develop employee competencies that enable them to respond quickly and flexibly to business needs (through the implementation of sophisticated human resource development, training, and workplace-learning initiatives) (Garavan et al., 2001; Nafukho et al., 2004; Çalişkan, 2010). Human capital investment happens through HRM practices that shape performance through three key channels: increasing employee Knowledge, Skills and Abilities (KSAs); motivating employees

to use their KSAs for the benefit of the firm; and empowering employees to do so (Huselid, 1995) (see Liu et al. (2007) for the specific HRM practices that influence organizational performance). Firms invest in human capital at two levels. At the individual level, firms provide training to employees and arrange performance feedback opportunities. At the process level they make investments in HRM practices, where employees spend time in the design, development, and actual implementation of these practices. Research in this area indicates a strong positive relationship between the investment of firms in high-performance work practices and firm-level performance (Huselid, 1995). Investments in high-performance work practices as compared to individual practices yield higher positive results (Combs et al., 2006). These studies suggest that organizations are inclined to invest in programs that increase and retain firm-specific human capital. These practices also increase a firm's adaptability to environmental demands. Organizations can create immense value by suitably adapting their human resources to meet changing environmental requirements thereby enhancing their dynamic capabilities (Eisenhardt & Martin, 2000; Helfat et al., 2009). Such firm-specific human capital investments constrain the mobility of employees since they cannot get rents for their firm-specific skills in the market place (Mackey et al., 2013). By the same argument, firms are not inclined to invest in general human capital since they are transferable and may lead to attrition. However, firm-specific human capital is associated with fallacies of opportunism, since both the parties try to extract rents after investments are made, firms tend to partially compensate employees for their skills, and employees tend to withhold their productivity (Coff, 1999). Thus, though the firm specific-general distinction provides a useful way of thinking about the transferability of human capital, it does not conclusively confirm it as the only source of value creation and potential competitive advantage (Wright & McMahan, 2011). Although recent studies on human capital are firm specific and human capital centric, critics argue that firm specificity of human capital has been overemphasized (Campbell et al., 2012).

Levels of Analysis

The most fundamental definition of human capital as an individual's Knowledge, Skills, Abilities and Others (KSAO) represents a primary consideration of human capital at the individual level. At macro levels, human capital has been considered as a linear aggregation of individual KSAOs at the unit, team, or firm levels. Human capital research has traditionally been at a single level, either macro or micro where the level of theory and measurement has been confined. This traditional approach is often marred

by cross-level fallacies since researchers attempted to generalize the results obtained at micro level and apply them to the macro level; or contextual fallacies as researchers often fail to acknowledge the context specificity of human resources (Ployhart & Moliterno 2011). Acknowledging these fallacies, recent theoretical postulates by Ployhart and Moliterno (2011:128) delved further into the aggregation processes. They presented unit-level human capital[2] as a resource "that is created from the emergence of individuals' knowledge, skills, abilities, or other characteristics" through an "emergence enabling processes." The emergence enabling processes that translate individual level human capital to unit-level human capital have behavioral connotations since unit-level capital is an outcome of the interaction of the task environment of the team and the social/psychological processes that are mobilized to respond to the task environment. The unit-level human capital is said to synergize skill complementarities within the unit and has a tacit component of knowledge (Nonaka, 1991) since individual members build tacit knowledge regarding one another's skills, working styles, and preferences, and develop idiosyncratic working relationships with each other (Wright et al., 2013). This aggregated unit human capital is specific to the firm (for it is created by idiosyncratic emergence processes) and more complex than simple aggregation of individual KSAOs. A recent review and synthesis of literature on human capital by Ployhart, Nyberg et al. (2013) takes this idea further and expounds that although human resources originate in individual KSAOs, multiple distinct types of human resources exist at individual and collective levels, which are much more diverse than the historical specific–generic distinction. These resources may be combined within and across levels via processes of emergence and complementarity. The human capital resource combinations so obtained are complex, and nearly all such combinations are firm specific. The authors therefore argue that the locus of competitive advantage exists primarily with combinations of human capital resources, even when they originate in simple, imitable, or tradable resources. Any human capital intervention at the firm level operates on the individual level and collectively influences and shapes the firm-level aggregate human capital.

On the basis of these fundamental insights, scholars in different disciplines have studied the construct of human capital at various levels. Management scholars in human resources, organizational behavior, industrial/organizational psychology, or economics have focused on the micro level by studying how individual employee KSAOs are linked to individual outcomes. Studies in organizational theory, strategy, and development economics have focused on the macro level on how the aggregate human capital of a unit, organization, or economy translates into a firm-level competitive

advantage and economic development of a country (Hatch & Dyer, 2004; Ganneoili, 2005). Economists have looked at human capital and investments in human capital from individual and economic development perspectives. They have tried to answer questions such as why people demand education, what underlies rapid growth in educational access, why more educated people are more likely to enter the (formal) labor market, or what the reasons are behind positive relationship between education and incomes and the barriers to access to education (Becker, 1964).

Beyond multilevel theories, recent studies in human capital literature have attempted to bridge perspectives from different disciplines. For example, literature in strategy and human resource management on human capital has progressed along separate paths until recently, when the field was integrated to consider a collective treatment of the construct as strategic human resources management (SHRM) (Wright & McMahan, 2011; Wright, Coff, & Moliterno, 2013). The SHRM perspective considers those human resources as strategic that provide value to a firm in a unique way. Firm-specific human capital that cannot be traded in the factor market and is more likely to appropriate value for firm is a clear example of strategic human capital (Meyer, Somaya, & Williamson, 2012).

Measurement of Human Capital

Human capital has been measured in a variety of ways and has been related to a range of individual outcomes. SHRM literature has used three measures for human capital (Wright & McMahan, 2011); subjective measures using one (Wright et al., 1999) or more respondents (Takeuchi et al., 2007), proxies in macro-level studies (Hitt et al., 2001), and direct measures like years of education, emotional stability, and conscientiousness that are aggregated at the collective level (Ployhart et al., 2006, Pil & Leana 2009). The standard measures of human capital used at the individual level include education level, quality, prestige, and degree type (Judge et al., 1995). In a meta-analyses of individual career success, several other variables like the number of hours worked, work centrality, job tenure, organizational tenure, work experience, willingness to transfer, international work experience, education level, career planning, political knowledge and skills, and social capital were also included as a measure of human capital. Measuring human capital at the unit level has been done by aggregating the variables at the individual level that assumes a linear relationship between individual and organizational levels. However, for a rigorous measurement of organizational or unit human capital it is important to account for the emergence processes (Ployhart & Moliterno, 2011; Wright & McMahan, 2011).

Social Capital: Concept and Genesis

Evolution of Social Capital Theory

The idea of social capital as a resource finds its earliest mention in the work of Hanifan in 1916 as a resource to enhance school performance (Conrad, 2008). The idea resurged again in urban sociology in the 1950s, in exchange theories in the 1960s, and in economics in the 1970s, but it was the conceptualization of social capital as an intangible resource existing in the relationships among persons by Coleman (1988, 1990) and Putnam (1995) that laid the foundations for current research. The theory of social capital has witnessed sustained prominence in social science literature since then. Most of the existing theoretical contributions depict social capital as a positive and all-embracing tool that lies within the norms, trust, and solidarity of social relationships that everybody can benefit from. It is presented as an intangible resource reproduced by actor's beliefs and symbols rather than a physical form residing in social networks, in which individuals can invest in by increasing social relationships with an expectation to reap benefits. Later works on social capital have developed several threads within this understanding around nine primary fields: (1) families and youth behavior problems; (2) schooling and education; (3) community life ("virtual" and "civic"); (4) work and organizations; (5) democracy and governance; (6) general cases of collective action problems; (7) public health and environment issues; (8) crime and violence; and (9) economic development (Woolcock & Narayan, 2000).

Understanding Social Capital

> Social capital is the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor.
>
> Adler and Kwon, 2002: 21

Social capital as a resource to individuals has been explicated along three dimensions—structural, cognitive, and relational (Nahapiet & Ghoshal, 1998). Structural social capital refers to the overall pattern of connections between actors, network ties, and network features such as network density and configuration. The cognitive dimension refers to elements that provide shared beliefs, identities, representations, interpretations, and systems of meaning among individuals and groups. Cognitive social capital is reflected in the use of specific language and codes. The relational dimension

reflects those assets that are created and leveraged through relationships like trust and closeness. Examples of relational social capital include family ties, friendship, business relations, or rapport with coworkers.

Structurally, social capital is considered as a reflection of the basic elements of social life representing the goodwill that is nurtured in social relationships. These social relationships can be used as a resource for action by individuals as they facilitate information flow, can be used to exert influence on agents, or certify an individual's social credentials (Lin, 2002). These relationships could be "internal" or "horizontal ties," which are relations that an actor maintains with other actors within a collectivity; or "external" or "vertical ties," which are relations among actors from a different collectivity or both (Adler & Kwon, 2002). Other relationships are classified according to their strength, "strong" or "weak" ties (Granovetter, 1973) and "bonding" or "bridging" (Svendsen, 2006; Lee, 2009). Bonding refers to "intra-community" or "inward" linkages among actors who communicate more frequently, develop high levels of trust, emotional intimacy, and mutual empowerment, and are generally "strong" ties. Bridging refers to "extra community" or "outward" network linkages across diverse social cleavages where actors interact infrequently, do not share emotional closeness, and are generally "weak" ties. Such ties help individuals pursue individual prospects by higher exposure to new information, and at collective level it aids in regional development (Woolcock, 1998; Lee, 2009). Otherwise, networks are expressed with respect to the closure that refers to the density of the network (Adler & Kwon, 2002). Networks with high closure create a sense of identity and often result in shared language, common rituals, and codes, leading to high levels of cognitive and relational social capital.

Social capital as an outcome of normative value systems has been considered a lubricant that facilitates human interactions. This dimension views social capital as a function of norms that encourage cooperation and "must substantially include virtues like telling the truth, fulfilling obligations and reciprocity" (Fukuyama, 1997:5). These subjective social processes have been found to positively influence organizational effectiveness and regional prosperity. The representations of social capital as a resource for action introduced a social structure into the rational action paradigm. Overall research in social capital draws on the principles of rational action in economics and social processes in sociology to explain actor's actions, social processes, and development of social organizations.

The creation of social capital begins at the individual level. Glaeser (2001) notes, "decisions to invest in social capital are made by individuals not communities… [so] without a definition of social capital that begins at an individual level, we cannot begin to understand its formation" (p. 2).

Propounding the unitary concept of *individual social capital,* Glaeser gave this definition: "Individual social capital is the set of social attributes possessed by an individual—including charisma, contacts and linguistic skill—that increase the returns to that individual in his dealings with others" (p. 5). Network-structure-based arguments also posit an individual to collective linkage; the best way for an individual to develop social capital is by pursuing numerous and strategically positioned "weak ties" with others (Granovetter, 1973). Structural holes provide "brokerage opportunities" within a social system, whereby individuals who are able to bridge gaps between otherwise disconnected others enhance their stores of social capital (Burt, 2000).

Like all other forms of capital, social capital is a long-lived asset in which other resources can be invested, with the expectation of a future flow of benefits (Adler & Kwon, 2002). Networking in informal and formal associations, increasing civic engagements, joining industry clusters or industry bodies are accepted ways of enhancing social capital at individual and organizational levels. This renders benefits in the form of superior access to information, power, solidarity, enhanced collective identity, and capacity for collective action. Since an investment in networks of relations has a time cost to individuals and groups, such decisions are made in a direct comparison to the opportunity against the cost of time. As the opportunity cost of time rises, there will be a lower investment in social capital (Glaeser, 2001). Job characteristics also moderate such investments, for instance, occupations like marketing, sales, and advertisings, which require more social interactions, seek higher investments (both individual and collective) in social capital.

The motivations to invest in social capital are largely contextual since some forms of social capital do not directly benefit the actors, and individuals have a lower tendency to invest (except in cases of high-level commitment to the collectivity). On the contrary, there are some forms of social capital that directly benefit those who created them, like information acquisition, trusting others, establishing norms to reduce negative externality. Rational actors do not underinvest in these kinds of social capital. An important property of some forms of social capital is that they are "collective goods," that is, they are not the private property of those who benefit from them (Coleman, 1990). Owing to positive externality, the returns to this form of social capital rise with the level of community investment in social capital. An associated problem with this characteristic is that it suffers from the problem of "free riders." Complementarities across individuals in this type of investment are seen as an important aspect of community-enhancing social capital (Glaeser, 2000). It is also possible that private returns to social capital actually decrease as more people invest in it. As social capital grows, maintaining it can become overwhelming. In addition, social relationships

require continuous maintenance since they have to be periodically renewed and reconfirmed or else they lose efficacy (Coleman, 1990). However, if trust develops in these relationships, they take on long-lasting qualities thereby requiring less time to maintain (Tymon & Stumpf, 2003).

Social capital resides in the relations and not in the actors, so a commitment is required by both the sides to maintain it, and withdrawal from one side causes the connection to dissolve (Burt, 1992). Small changes in fundamentals can lead to large changes in aggregate behavior. As one person increases his or her level of social capital (in response to a change in fundamentals), that person causes everyone else's investment to rise because of complementarities (Glaeser, 2001). Since the combination of positive externalities and complementarities leads to strong gains from coordinated investments, political scientists and economists argue for government intervention in social capital investment. The type of government interventions that have been suggested based on social capital theory include home ownership, community permanence, and education.

The relational interdependencies and the value chain of social capital from creation to consequences has received multiple and often contradicting explanations. Economists explain it by the rational actor model; individual and collective actors are driven by instrumental motives; hence actors tend to cultivate and exploit social (and human) capital to advance their careers. On the contrary, sociologists believe that social capital is created as an outcome of normative commitments of a less directly instrumental nature, such as norms of reciprocity (Woolcock, 1998; Adler & Kwon, 2002).

The literature on social capital has contributed to and is drawn from various streams and is a true appropriation of these ideas (Coleman, 1990). Woolcock and Narayanan (2000) identified four common approaches to social capital used in social sciences: (1) the communitarian view, which focuses at the productive outcome of normative value systems in civic activity and community participation; (2) the networks view, which reflects the importance of both vertical and horizontal relations between people and organizations; (3) the institutional view, which suggests social capital as a dependent variable, a by-product of the relevant political, legal, and institutional arrangements; and (iv) the synergy view, which attempts to integrate the range of communitarian, network, and institutional approaches to capital.

Each of these four perspectives has been adopted by researchers from different streams for their field of study. The communitarian view has been adopted mainly by sociologists, political scientists, public policy designers, and economists, and their research has focused on the study of families, youth behavior, schooling and education, public health, community life, democracy and governance, economic development, and general problems

of collective action. This approach has been used to explain a wide range of social and economic phenomena, like general economic performance, levels of crime and disorder, employment, and health trends (Paprock, 2006). The network view has drawn the attention of human resource scholars, organization theorists, and sociologists working to unravel the intricacies of individual and organizational performance. The institutional view is mainly taken by the organizational theorists, specifically institutional theory scholars, to understand the influence of social, cognitive, and normative pillars of institutions in the creation of social capital and its influence on individual and organizational behavior. The synergy view, which attempts to integrate the compelling work emerging from the communitarian, network, and institutional camps focuses on community groups, civil society, firms, and states as key actors and is primarily pursued by sociologists, political economists, economists, organization theorists, and strategy and institutional scholars.

Levels of Analysis

Social capital has been considered at both micro and macro levels for analysis. The primary creation of social capital happens at individual level since individuals build relationships with other individuals, communities, or organizations. The theorists working at the macro level believe in the aggregation of affects across levels and aggregate the individual responses to measure social capital at the collective level (Lee, 2009). By this way, the organizational or group social capital collectivity depends on the size and structure of its individual actors' network ties.

At the macro level, social capital has been portrayed as an attribute of nations or geographic regions, communities, individual networks, organizations, or firms interacting with other firms or individual actors (Leana & Van Buren, 1999). At the meso level, social capital lies in the interorganizational linkages and benefits industry. Social capital residing within a collectivity or among groups facilitates mutually beneficial collective action that can help achieve higher outcomes in multiple domains like economic development or community peace (Krishna 2013). Both bonding and bridging forms of social capital have been empirically established to facilitate entrepreneurial activity (Davidsson & Honig, 2003) and improve community and societal development (Van Bastelaer, 1999). At the micro level social capital brings positive social and economic returns to the individual. Since social capital benefits a collectivity at macro/meso levels, it is treated like a *public good* (Coleman, 1988). Social capital benefits the individuals at the micro level who owe relationships and it is treated as a *private good* at this level.

The communitarian and network perspectives have used social capital as an independent variable that affects development and performance outcomes at organizational, national, regional, and societal levels. The theorists who embrace an institutional view have tried to explain social capital as a dependent variable, which is the outcome of social, political, and economic institutions (Woolcock & Narayanan, 1998; Lee, 2009).

Measurement of Social Capital

There have been several approaches for measuring social capital, but it is difficult to find a single method for measuring elements of social capital such as levels of trust, attitudes, values, and group membership and participation levels. As Woolcock and Narayan (2000, p. 239) note, "obtaining a single 'true' measure of social capital is probably not possible" primarily for three reasons—the most comprehensive definitions of social capital are multidimensional, the nature and forms of social capital change over time (as the balance shifts between informal organizations and formal institutions), and, finally, no long-standing cross-country surveys were initially designed to measure "social capital." This has left contemporary researchers with the task of compiling indexes from a range of approximate items (e.g., measures of trust, confidence in government, voting trends, social mobility, modern outlook, hours spent volunteering). However, some studies have successfully identified useful measures and proxies for social capital like membership in informal and formal associations and networks, active participation in these associations, membership heterogeneity in these associations, and so on (Putnam, 1993; Glaeser et al., 2002). Others present social participation, social support, social networks, network transactions, structure, as well as the quality of networks as indicators of social capital. The works of Robert Inglehart and team (2000) on World Values Surveys has been extensively used by social science researchers to measure the soft elements of social capital such as trust, norms, and values that enable various exchanges in the absence of formal contracts, reduce cost of information, and reduce transaction costs. The world value surveys present the impact of the values and beliefs of people on political, cultural, and social life across more than 60 countries.

Human and Social Capital—Similarities and Differences

The two forms of capital have similarities as a resource but differ on ownership and tangibility as Coleman notes:

> Physical capital is wholly tangible being embodied in the observable material form; human capital is less tangible, being embodied in the

> skills and knowledge acquired by an individual; social capital is even less tangible, for it is embodied in the *relations* between persons . . . The distinction between human capital and social capital . . . [lies in that] human capital resides in the nodes, and social capital resides in the lines connecting the nodes. (1990: 304)

The two theories take different approaches—while human capital theory takes a functionalist approach by presenting individual KSAOs as a resource, social capital adopts a subjective perspective by focusing on the goodwill resting in relationships. The two types of capital differ in their ontology, sources, and substances. While human capital lies in the head of the owner and encompasses knowledge and skills, social capital is intangible lying in the goodwill and embedded values in relationships. The two also vary in transferability over a continuum. Though neither of them is wholly transferable, knowledge and skills can be imparted to other individuals whereas social relationships cannot be transferred but can help in building relationships (Tymon & Stumpf, 2003) and have positive externality (Galunik, 2012). In addition, both have positive spillover effects; an individual's relationships, social contributions, and position in the community motivate other members of the community to invest in the kinds of social capital that benefit everyone. Similarly, the returns of human capital to one member in a family or community encourage others to acquire similar skills.

The two can be differentiated along the antecedents that motivate or demotivate individuals toward their creation. If individuals have high mobility or are nearing death they are less likely to invest in social capital since they foresee no benefit from this investment. The duration in the community strongly predicts social capital (DiPasquale & Glaeser, 1999). Extending the argument to organizations, the high mobility of individuals dissuades them from building social capital within an organization. Research also informs that social capital helps workers find jobs (Adler & Kwon, 2002). It can therefore be said that individuals with high mobility would be inclined to build external linkages rather than invest in intraorganizational relationships; this, however, needs further empirical validation. Mobility in case of human capital is not a big deterrent as long as the acquired human capital can be made use of in new place and helps individuals to get better jobs.

The two are said to be created at individual level but aggregated through differing mechanisms, human capital by enabling processes (Ployhart & Moliterno, 2011) and social capital by virtue of normative values like trust, solidarity, and reciprocity (Woolcock & Narayan, 2000). Thus, the two concepts cannot be compared in one unit of analysis or measurement although they can be synergized with other forms of capital and can be partly

substituted (Adler & Kwon, 2002). For example, a lack of human capital can be substituted by a person's superior connections that provide him access to task-specific knowledge. Social relationships, however, are less substitutable since the benefits of information flow on informal networks cannot be substituted by individual knowledge. However, new technologies like the Internet have partly filled this gap by enhancing access to knowledge and information. The resources in two forms are convertible (Adler & Kwon, 2002); for example, the advantages conferred by one's position in a social network can be converted into economic or other advantages (Coleman, 1988). Likewise, human capital is also convertible; the advantages gained by high human capital can be used to gain a high position in a community.

Social capital is built by an individual with efforts toward building relations, which has to be necessarily reciprocated by the other party. Organizations may take social capital building initiatives like encouraging unstructured employee interactions but it depends on the individuals to build relationships. Therefore, social capital is less controllable. On the contrary, building an individual's human capital is in the hands of the individual. Human capital building efforts at the community level (a government's education initiatives) depend on the individuals and hence they are not controlled by the initiators. It can be said that social capital has low controllability and human capital has medium controllability (Tymon & Stumpf, 2003).

The time required for their creation is quite long; it cannot be done overnight. While human capital involves basic education and social capital needs years of nurturing, incremental human capital can be developed in short periods by specialized trainings. The two are appropriable since a relationship of one kind (like friendship) helps in other purposes (e.g., gathering information or helping in getting a job) (Coleman, 1988). In a similar way, a qualification in one stream enhances analytical abilities in other areas.

The two forms of capital differ from other forms of capital in depreciation for they do not have a predictable rate of depreciation; both are maintained and enhanced by use and may lose relevance with nonuse. Knowledge, which is the basic element of human capital, is enhanced by its application. Cognitive and relational dimensions of social capital accumulate in contexts that facilitate a higher degree of conversations and interactions. Trust is reciprocated and amplified with recurrences. Obsolesces of social and human capital have been cited as the main reason for the slowdown of Japanese economy in 1990s. The Japanese human capital was traditionally characterized by obedience, diligence, and homogeneity, which was a mismatch to the human capital needs of the new economic era that demanded

creativity, leadership, and heterogeneity. Similarly, some aspects of society (like social risk insurance) that helped Japan to grow quickly post–World War II became obsolete post-1990 and was replaced by market mechanisms and formal institutions (Omori, 2000).

Table 4.1 captures the fundamental similarities and differences in the conceptualization and development of human capital and social capital theories, as discussed in this section.

Table 4.1 Similarities and differences in conceptualization of human and social capital

Attributes	*Human Capital*	*Social Capital*
Conceptualization	As a unit of production- capital	As a unit of production- capital
Ontology	Knowledge and skills	Social networks and values
Time horizon for creation	Medium to Long	Long
Synergistic	High	High
Appropriability	High	High
Convertibility	Medium	Medium
Substitutability	Limited	Limited
Depreciation/ obsolesce	No predictable rate of depreciation, enhances by use, risk of obsolesce due to contextual factors	No predictable rate of depreciation, need maintenance, risk of obsolesce due to contextual factors
Spill over and reinforcing effect	Positive spill over and medium reinforcing effect	Positive spill over and medium reinforcing effect
Transferability	Medium	Low
Tangibility	Medium	Low
Aggregation	Linear or nonlinear depending on the enabling processes	Nonlinear, interactive
Controllability	Medium	Low
Fungibility	Medium	Low
Mobility and Motivation	Less influenced by mobility	Contextual factors and mobility influence motivation to build social capital
Personal or Public Good	Personal	Both treatments given
Investment level to create and maintain	High	High

Relationship between Human and Social Capital

The two theories on human and social capital have progressed independently. Very few attempts have been made to explore their sources, substances, and effects at individual and collective levels and to link them. However, in practice the two forms of capital do not act in isolation but "are often complementary" (Coleman, 1990).

If human capital theory postulates were to act independent of contexts, the individuals possessing the same levels of human capital should get equal access to economic opportunities, but, in practice, some individuals get better jobs and some perform better. Such differences can be explained by social capital theory, since the location of an individual in the social structure of a market or hierarchy determines his/her access to opportunities as well as information (Glaeser, 2000; Burt, 1997). Therefore, human capital cannot be taken out of the context of social relationships, and the returns on intelligence, education, and seniority also depend on a person's position in the network (Glaeser et al., 2002). Managers with more social capital get higher returns on their human capital because they are positioned to identify and develop more rewarding opportunities (Burt, 2000). Hence, although human capital is necessary for success, it is useless without social capital investment opportunities. A simple increase of human capital stock is not enough to generate social or economic progress. Increasing human capital may even impede social capital in the absence of social cohesion by further isolating individuals who do not have access to formal channels of knowledge and whose position is further weakened by the fact that most others are gaining skills and qualifications. This may negatively affect the benefits of human capital progression. These aspects need to be considered while aggregating the effects of these two forms of capital. The following section discusses how human capital moderates the creation and outcomes of social capital and vice versa.

Human Capital and Social Capital: The Forward linkages

Direct linkages can be drawn from human capital to social capital since creation of both these resources begin at the individual level (Becker, 1964; Glaeser, 2001; Ployhart & Moliterno, 2011). Considering the conceptual similarity of unitary social capital to the individual human capital, much of the theory on investment in human capital can be applied as it is to individual social capital (Glaeser, 2001). The most important "X factor" that mediates human capital to social capital translation is the "sense of responsibility for the collective," which is achieved with explicit commitment to

the success of the group (Roberts & Lancey, 2008). Once an individual has a sense of responsibility toward the group, specific activities and institutional arrangements serve to make it easier to build social capital (Glaeser, 2000). Four potential forward links between human and social capital that help create a sense of responsibility and commitment to the success of group are education, institutions, purposive action, and specific activities (Glaeser, 2001).

Education- Education is the most elementary component of human capital that is directly related to social capital as Glaeser notes, "Unquestionably the most robust correlate of social capital variables across individuals is years of schooling" (2001:16). The approach here reflects the idea that protracted periods of education lay the foundation for developing social skills like building the social confidence of individuals in group settings. Years of schooling are directly correlated to organizational membership and trust, which are indicative measures of social capital (Glaeser, 2001). Education instills values in individuals such as being a responsible citizen/group member/organizational member and imparts skills that increase self-esteem and helps to carve a position in the group.

Institutional arrangements: Institutional and societal arrangements play an important role in the interrelationship between human and social capital (OECD, 2001). The capacity of social groups to act in their collective interests depends on the quality of the formal institutions under which they reside (Woolcock & Narayan, 2000). These formal institutions along with norms of social behavior provide the training that is needed to build commitment for the collective and condition an environment that facilitates the generation of these two forms of capital. Social capital, human capital, and political-legal-institutional arrangements exist as three interconnected elements that affect well-being. They determine how both forms of capital can be generated and used within the social context (Roberts & Lancey, 2008). In a case study on dairy farmers, the presence of institutional arrangements emerged as a link behind the translation from human capital to social capital by providing legitimacy to the human capital being shared through social networks (for details see Roberts & Lancey, 2008).

Purposive action: An important question to answer while tracing links between human capital and social capital is whether investments in these resources yield direct benefits to the actor. Social networks can be seen as individual resources that facilitate goal achievement; the goal can be either a personal one or a societal goal. But to achieve the desired goals and understand issues beyond their private lives, individuals must possess sufficient knowledge and skills to receive and perceive information and be able to formulate responses (Glaeser et al., 2002; Wollebaek & Selle, 2002). Therefore,

the complementarities of these two resources are instrumental in achieving the desired goals. Purposive action (or common goals) therefore best captures the action that activates the X factor or motivates an individual to invest in firm/association/group-specific human capital and social capital.

Specific activities: Specific activities like training and developmental interventions targeted at building explicit skill sets lead to better social cohesion and trust based on intergroup relationships. Formal training brings an individual into a social learning fold that leads to the emergence of common goals, norms, and collective understanding on the kinds of behavior that maximize individual and collective benefits. Members in such groups commit themselves to the common purpose of maximizing their own and one another's success. Thus specific training activities with purposive action help create social capital during the creation of human capital. In a national level program on workgroups aimed at bringing cohesion among grazers in Australia, the participants indicated they had developed a suite of interpersonal skills while undergoing the planned development of human capital like leadership roles, skills, and capabilities. These skills benefited not only them but also their family and groups (Roberts & Lancey, 2008). The case implies a relationship where the development of human capital led to the development of social capital.

An important concern is how much the individual choice matters in the transfer of human capital to social capital. Before making any generalizations or strong assumptions we need to consider the possibility that individuals may choose their investment in community-enhancing and community neutral social capital separately (Glaeser, 2001). The first choice leads to the transfer of human capital to social capital and the second may not. In the human to social capital transformation in a group, it is observed that voluntarily formed groups/associations have more social capital in its basic element of trust, cohesion, goal congruence, and civic engagement (Wollebaek & Selle, 2002).

Human Capital and Social Capital: The Reverse Linkages

The existence of social capital provides a supportive environment for individuals to pursue their individual learning. Knowledge productivity requires personal involvement and individual learning in a favorable social environment. To enable knowledge productivity, the work environment should facilitate a conducive learning setting. Employees' shared interests, passion, responsibility, reciprocal appeal, and career awareness facilitated by social capital provide a fertile environment to promote individual and group learning. Hence the presence of social capital is an essential requirement

for positive learning outcomes. At the family level, three components of a family background help to build human capital: financial capital, human capital, and social capital. Educated parents often have strong social networks and financial resources that help their children get higher education and develop their human capital. Various professional bodies are exemplar institutions where a pool of professionals build a network of relationships that facilitates information sharing and collective learning. Similarly, at the community level, the trend of gaining higher education or developing professional skills has become the norm. The benefits accrued to individuals from acquiring these skills and education resulting in social capital motivates the younger generation to build their human capital in the same way. In another case study on a subtropical dairy program presented by Roberts and Lancey (2008), it emerged that social and business relations created opportunities to learn and gain new information. The development of the group's social capital helped to build human capital in various regions where they were operational.

The Human Capital and Social Capital Interlinkage Model

The foregoing discussions in the chapter explicate close relationships between the two forms of capital. Individual researchers have attempted to empirically or theoretically explain these relationships at the individual or unit level (Glaeser, 2001; Glaeser et al., 2002; Ansari et al., 2012). However, there is a clear gap in literature that presents an integrated theory describing the combined action of human capital and social capital at individual and collective levels and their interactions. This section attempts to present a multilevel multitheory framework integrating individual and collective levels of analysis and interrelationships between social and human capital as presented in Figure 4.1.

Independent effects of human capital – Human capital is created at individual level through formal and informal training that leads to higher individual outcomes. Individual human capital is said to aggregate to unit[3] level human capital through enabling processes (Ployhart & Moliterno, 2011). Unit human capital is different from a simple aggregation of the individual unit capital due to complementarities and synergies of component human resources and enabling processes. Individual and unit-level human capital independently and together aid higher unit-level outcomes.

Independent effects of social capital- Similarly, social capital also emerges at the individual level, which aggregates to unit-level social capital. The unit-level social capital is different from the simple aggregation of individual social capital and depends on the structure of networks, size, and norms.

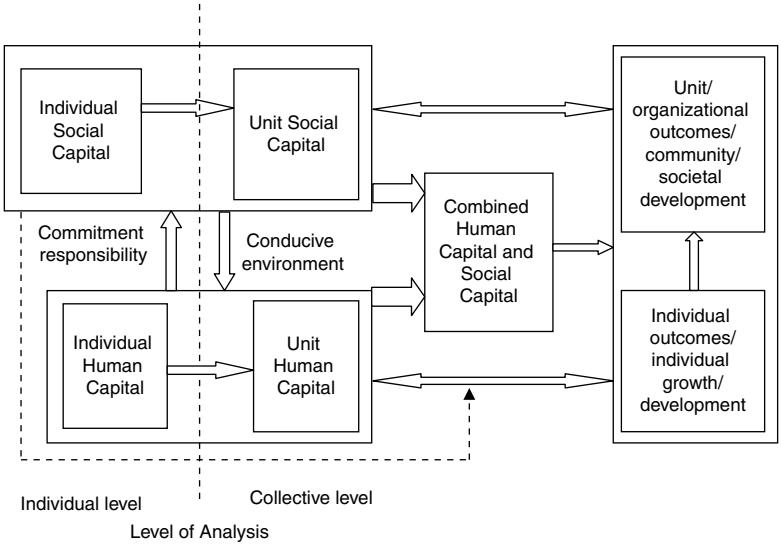

Figure 4.1 Human capital and social capital inter-linkage model.

Individual and unit social capital have been empirically established to be instrumental in improving individual outcomes, organizational performance, government quality (Putnam, 1995), and development (Woolcock, 1998; Glaeser, 2001).

Interaction and interlinkages of human and social capital- Human capital action cannot be explained outside of the context of social relationships since an individual's position in a network is instrumental in his ability to realize benefits of his human capital (Burt, 2000). At the organizational level, social and human capital collectively acts as a potentially important source for a competitive advantage leading to higher economic firm performance (Lee, 2009; Prahlad & Hamel, 1990). The participation of professionals in professional associations and clubs to enhance skillsets results in the creation of more social capital and increases unit-level outcomes. Hence, the relationship between individual/unit-level human capital and individual/unit-level performance is moderated by individual and organizational social capital (Zahra, 2010).

The forward linkages from human to social capital are instrumented by education, institutional arrangements, purposive action, and specific activities. X factors like the sense of responsibility for the collective, goal congruence, and explicit commitment to the success of the group help human capital translate into social capital. On the contrary, the creation of social

capital creates a conducive environment for generating human capital. At organizational levels, scholars have emphasized the close link between intellectual capital and the social capital of organizations (Nahapiet & Ghoshal, 1998; Zahra, 2010). It plays a central role in the exchange and transfer of knowledge or intellectual capital within and across organizations (Ansari, Munir, & Gregg, 2012).

This multilevel model has many broad implications that aid scholars in advancing and assimilating theories on human and social capital. First, the model sheds light on the microfoundations of two independent research streams operating at different levels[4] and integrates this body of knowledge to build a multilevel model bringing the two diverse literatures together. Thus, the overarching contribution of the multilevel model of human and social capital not only integrates micro and macro-level perspectives but also integrates two separate streams. The model urges researchers to step out of the single theory, single level analysis domain, to take a more holistic perspective. Future empirical research on human and social capital as integrated mechanisms operating at multiple levels is needed to confirm the linkages presented in the model. This will help theorists, practitioners, and policy planners to understand the essential elements for economic activity. The primary challenge in this research would be to define measurement units (Wright & McMahan, 2011; Ployhart et al., 2013) that can measure the independent and combined effects.

The model adds to the limited literature on the aggregation of individual level human capital to unit-level human capital (Ployhart & Moliterno, 2011) by identifying and explaining the moderating role of social capital in this translation. Social capital in the form of trust, reciprocity, and solidarity plays an important role in the aggregation of human capital. Thus, both individual level and collective level human and social capital are strategically valuable resources.

This multilevel research explains the processes of how and why the phenomena at lower levels coalesce to create a higher level construct that is distinct from its lower level origins (Kozlowski & Klein, 2000; Ployhart & Moliterno, 2011). It attempts to overcome cross-level and contextual fallacies in the interpretation of human capital that often undermines the importance of context. For example, the outcome of individual KSAOs of a team depends on firm-level strategies, team cohesiveness, and the collective KSAOs of the team. The translation of human capital at the individual level to unit level is not simple compilation, since hiring better employees does not necessarily contribute to firm effectiveness. There are other factors related to social behavior, trust, and solidarity that influences performance at higher levels. The model explains why the findings at one level may not apply to higher levels.

Conclusion

Both human and social capital have gained an increasing amount of attention by scholars in various fields such as economics, sociology, political science, and organization theory. In today's unpredictable and turbulent labor markets, it is a necessity and the onus of individuals to continuously enhance their human and social capital to overcome the risks of skill obsolesces to ensure their employability. This chapter attempts to tease out various interpretations and explanations of the two forms of capital provided in literature and presents an interlinkage model of the two types of capital. It contributes to the literature on human and social capital by clarifying the concepts and drawing their interlinkages. Human and social capitals lead to individual outcomes like better performance, high quality individual and organizational problem solving, enhanced career planning, increased chances of securing full-time employment, higher organizational commitment, enhanced organizational retention, and organizational outcomes like higher economic performance. At the societal level human and social capital helps in the overall growth.

Definite forward linkages between the creation of human capital to social capital that leads to enhanced individual and collective performance at the organizational and societal levels have been identified. On the contrary, the presence of social capital facilitates building human capital and moderates individual outcomes. The moderating effect of social capital in translating human capital to individual/unit outcomes poses an interesting research area for developing theories. An alternate research perspective is to look at human capital as an outcome variable of social relationships. The catalyzing effect of social capital in building human capital by providing a conducive environment needs further empirical exploration. This can be empirically tested at organizational level, and further research on cross-country comparisons will verify these theoretically developed linkages. Verification of the theoretically observed phenomenon in empirical settings will lead to robust theories of human and social capital at all levels. Similarly, the antecedents for developing human capital and its translation to social capital need empirical verification in organizational and societal contexts.

The understandings from the chapter can be deployed by researchers to push the theoretical frontiers in strategy, human resource, organization theory, public policy, and development economics literature. The findings will aid public policy practitioners to focus their developmental initiatives on social capital development as moderators in translations of human capital to social capital.

Notes

1. The paper aims to aid management and development scholars and hence the related literatures in economics, management, and development have been explored.
2. Unit refers to a collective level like firm, business unit, division, group, or team.
3. Unit here stands for a collective—a business unit, group, team, organization, community, economy. or society.
4. Human capital primarily considered to be operating at individual level see exception (Ployhart & Moliterno, 2011) and social capital to be operating at unit level see exception (Glaeser, 2001).

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PART II

Reporting and Signaling

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CHAPTER 5

A Social Network Analysis of Managerial Migrations: The Case of Large Companies in the United Kingdom

Mary-Paz Arrieta-Paredes and Bruce Cronin

Introduction

The enhancement of shareholder value is a focal point in contemporary financial economics because of its perceptible relationship with the company value management. From this perspective, executive managers, in particular, are deemed to be company value-adders and their performance is evaluated against this benchmark. This raises the question of how executives add shareholder value, and moreover, what makes some of them appear more capable than others to do it when firms recruit or head-hunt them.

Migration of senior managers from one firm to another, however, not only involves the redeployment of a particular set of individual capabilities but also provides the potential for a rich transfer of strategic and organizational knowledge and know-how. The value of an external managerial appointment, then, may derive both from the individual skills and capabilities they bring and from the context from which they come and relationships they maintain after migration. Thus, analysis of human capital in managerial value-added would benefit from a consideration of the extraorganizational social capital in which it is embedded over time.

In this chapter, we examine the extent to which the human capital sought in managerial recruitment is constituted or enhanced by the corporate context from which it is drawn. We apply social network analysis to economic and corporate finance theories of company value generation. The underlying intuition is that company value is constructible because of human capital movements among organizations, which represents a network phenomenon. In particular, we define human capital as transferrable assets that may connect firm value through managerial performance capable of enhancing economic profit. This definition places us closer to the management accounting angle of human capital (Abel & Deitz, 2011); however, we highlight the network effect of knowledge transfer throughout the text. Therefore this chapter aims to capture simultaneously some of the economics and sociology of human capital valuation. We develop an empirical study on managerial migrations among large companies in the United Kingdom using Exponential Random Graph Models (ERGMs).

Literature Review

Corporate Finance literature emphasizes the use of residual income models, according to which managerial performance is measured and rewarded in terms of shareholder value generation (Balachandran, 2006; Dutta & Reichelstein, 2005; Klumpes, 2005; Garvey & Milbourn, 2000; Wall & Greiling, 2011; Wallace, 1997). Economic profit is consequently generated by effective financial decision making likely reflected in the Weighted Average Cost of Capital (WACC), which translates into residual income (Brealey, Myers & Allen, 2011). This raises the question of how executive managers add company value, and moreover, what makes some of them appear more capable than others when firms recruit or head-hunt them.

Executive migration provides the potential for rich transfer of strategic and organizational knowledge, providing a mechanism for imitation or rapid catch-up with rivals (Kraatz & Moore, 2002; Rao & Drazin, 2002; Aldrich & Pfeffer, 1976; Almeida & Kogut, 1999). Rule and Irwin (1988) found recruitment from competitors as second only to cross-functional teams as the most frequently cited source of innovation. External recruitment is also potentially valuable as a source of additional, complimentary, or diverse capabilities and as a catalyst for new cognitive models (Kraatz & Moore, 2002).

But this potential is realizable only to the extent that this is made available and is transferable to the recipient organization (Cohen & Levinthal, 1990). Marshall and Heffes (2006) found half of transferring executives believed they did not meet their potential until three to five years after recruitment,

though this was reduced by head-hunting. Executive migration, however, is well-positioned to overcome deeply entrenched routines and practices and vested interests that may limit the transfer of knowledge between organizations through weaker channels. This is particularly so where the migrants transfer from high prestige or have long experience or political acumen. Knowledge transfer is also more likely in unstable conditions, where institutional or industry norms prove less reliable (Kraatz & Moore, 2002).

Executive migration is a function of supply factors as well as demand. On the supply side, migration is motivated by conditions and opportunities at the point of origin as well as those at the destination. Pfeffer & Leblebici (1973) consider length of service with the originator in nominal terms and as a proportion of the job history, the number of job changes, and length of service in the originating position and whether this is in a strategically valuable industry (government, banking, or finance). Lower performance at the point of origin is positively associated with executive migration (Dedman, 2003; Grusky, 1963; cf. Rao & Drazin, 2002). Despite apparent greater demand for general managerial skills, the supply of the most highly skilled general managers is necessarily limited as this amounts to a relative advantage rather than an ability level (Murphy & Zábojník, 2004).

Main (2001) found chief financial officers appointed from outside when sales grow rapidly but operating performance is weak. Murphy and Zábojník (2004), however, argue theoretically that today demand from large global leading firms for the most highly skilled general managers is highly inelastic, with intense rivalry among them for this resource.

The recruitment of CEOs involves distinctive factors arising from the central leadership role of the position, with advantages to internal sourcing from proven capabilities (Shen & Cannella, 2002; Zajac, 1990), firm-specific knowledge (Harris & Helfat, 1997), and reduced organizational disruption in the transition (Cannella & Lubatkin, 1993; Greiner, 2002; Grusky, 1963). On the contrary, internal appointment may reinforce existing suboptimal practices, limit exposure to different opportunities, and have less influence on their peers than very experienced or prestigious outsiders (Finkelstein & Hambrick, 1990; Finkelstein, 1992; Kesner & Sebora, 1994; Kraatz & Moore, 2002). These considerations could apply to some degree to all senior executive positions, however.

Performance improvement is empirically associated with internal, rather than external, recruitment of CEOs, particularly when presuccession performance is poor (Davidson, Worrell, & Cheng, 1990; Furtado & Rozeff, 1987; Greiner, 2002; Shen & Cannella, 2002; Wiersema, 2002; Zajac, 1990; Zhang & Rajagopalan, 2004). And market reaction to succession varies with presuccession performance, positive reaction to insiders in low performance

situations, and to outsiders in high performers (Furtado & Rozeff, 1987; Lubatkin, Chung, Rogers, & Owens, 1986). Yet, external recruitment is more likely in the case of poor performance (Cannella & Lubatkin, 1993).

The outsider/insider distinction, however, appears to be one of cognitive compatibility; succeeding "outsiders" actually had common characteristics to "insiders" arising from common origins in institutions of similar prestige (Birnbaum, 1971) or similar industry (Pfeffer & Leblebici, 1973). Leggatt (1980) found a hierarchy of distinctive management recruitment and compensation patterns varying by industries, with banking, oil, and chemical industries in the United Kingdom recruiting from exclusive social and educational backgrounds. Chief Knowledge Officers tend to have a common career profile, internal tenure, and social skills (Earl & Scott, 1999). Datta and Rajagopalan (1998) found CEO succession related to cognitive characteristics compatible with firm strategy. Firms pursuing product differentiation strategies appointed less experienced but better educated managers with output-oriented backgrounds, such as marketing or product R&D. High-growth firms appointed younger less experienced managers, without any particular functional background. Capital-intensive firms recruited managers with throughput-oriented backgrounds, such as production or process R&D. Firms with better fit between strategic situation and CEO characteristics had better ROA performance.

Studies suggesting a relationship between managerial migration and firm performance or behavior, however, need to carefully control the differences in motivational incentives among the firms being compared. For example, investment and financing strategies pursued by managers are influenced by the structure of equity-based compensation schemes and stock options (Lewellen, Loderer, & Martin, 1987; Ryan & Wiggins, 2001; Smith & Stulz, 1985) and these will affect firm performance (See Alchian & Demsetz, 1972; Jensen & Meckling, 1976). So performance differences among firms after managerial transfer may be attributable to the different incentive structure the manager is operating within rather than capabilities transferred. Yet since normally external recruitment fills an existing role, the effects of the incentive structure will largely already be evident in existing performance.

In any case, various studies have found executive migration associated with the transformation of business practices, including adoption of divisional structure and control systems (Virany, Tushman, & Romanelli, 1992), market entry strategy (Boeker, 1997), strategy (Geletkanycz & Hambrick, 1997), new products (Kraatz & Moore, 2002), new venture formation (Burton, Sorensen & Beckman, 2002), and selection and prominence of the origin firm for benchmarking (Still & Strang, 2009).

Pfeffer and Leblebici (1973) argue that the tie formed by a managerial transfer also provides a communication channel between the originating and receiving firms because of the interpersonal relationships maintained by the migrant in each firm. The relationships in the originating firm are likely to decay, however, in as much as these were task-based. Pfeffer and Leblebici's (1973) focus is on the potential for this communication channel to act as an interfirm coordinating or behavior-normalizing mechanism (see also Baty, Evan, & Rothermel, 1971).

Recruiting firms offer a salary based on supply conditions and expected return from the perceived capabilities of the manager. This may or may not prove to be met, though performance appraisal processes can mitigate the risks of error. What may or may not be included in the assessment of expected return are the network externalities provided by the appointee's connection with their previous appointment. These may comprise positive externalities such as access to proprietary information available to the originating firm, specific industry contacts, and relationships (Broschak, 2004), in addition to the general "environmental scan" contributed by the manager and practices and know-how potentially transferable to the recipient.

In summary, the literature suggests that executive managers are recruited to maintain or enhance shareholder value-added, in the context of supply and demand, where supply is a function of service with the originating firm, firm performance, and the strategic importance of the industry.

But beyond the particular capabilities that executive managers bring, there is also the potential for a rich transfer of strategic and organizational knowledge and the maintenance of relationships from the originating company, at least in the short or medium term. The realization of this potential value depends on the extent to which migrating executives compliment or transform existing routines and practices to transfer knowledge and know-how. This is most likely when the transfer is from a high-prestige firm or arises in unstable conditions and where there is cognitive compatibility between the previous experience and the new, such as commonalities in background and strategic fit.

Keeping all else equal, then, we postulate that executive migration affects the company value of the recruiting firm essentially because human capital and its associated social capital comprises "transferrable assets" capable of enhancing economic profit. The empirical picture established in the literature is likely to have informed recruitment priorities and be translated into heuristics within recruitment practice to some extent. So we hypothesize that recruiting firms will value executive managers from originating firms in related industries that have high profitability (Campbell,

Coff & Kryscynski, 2012; Pazzaglia, Flynn & Sonpar, 2012; Lo, Yang, Hung & Lai, 2011), seeing this as a means of "importing" value-adding capabilities.

Complementary, we could think of the human capital movements implied in a managerial migration as a process influenced by the characteristics of the firms involved, what is known in Sociology as social selection (Robins, Elliott & Pattison, 2001a); in this chapter we focus on social selection because the originating firm's valuation features may explain why some executives are hired or not. Social selection is considered only tangentially in Human Resource Management literature (Li, Xiaotao, Sue-Chan & Youmin, 2010). In our study firm value is shown to impact executive migration through managerial performance "emulation"; hence the models we develop reveal social selection in recruitment.

Because of their imminent relational nature, managerial migrations are suitable for network analysis. We estimate and simulate tie models; in particular, we use Exponential Random Graph Models (ERGMs), which are statistical models for making inferences about network patterns as identified in social network analysis (Robins & Lusher, 2013a; Van Duijn & Huisman, 2011). The fact that the observed phenomenon concerns human capital redeployments allows the possibility of different migration patterns, posing the bias of simultaneous inter- and intrarelational data dependence, which are well dealt with by the use of ERGMs. In similar studies on UK managerial networks Arrieta-Paredes and Cronin (2013a, 2013b) have also addressed this technical issue using other type of tie models. Methodologically speaking also, this chapter's models add to the interorganizational studies of Wang, Robins, Pattison, Lazega, and Jourda (2013) and Agneessens and Roose (2008).

Studies applying ERGMs to business economics are relatively recent. The focus so far has been on knowledge transfer, particularly on intraorganizational learning (Su, Huang & Contractor, 2010; Skerlavaj, Dimovski & Desouza, 2010; Rank, Robins & Pattison, 2010), and interorganizational learning (Lomi & Palotti, 2011, 2012; Broekel & Hartog, 2013; Harris, Provan & Leischow, 2012). An application to stock markets can be found in Focardi, Cincotti, and Marchesi (2002); spiritually closer in terms of Industrial Organization matters, though, is Lomi and Fonti (2012), which examines the structural effects of alliances in product markets. Hence our contribution to the literature of human capital and assets resides on a novel analysis from the systems-networks perspective; particularly, we find evidence of a social selection mechanism in recruitment, driven by an interfirm valuation process.

Methodology

The initial research question is approached through an exploration of executive managers' migrations among large companies in the UK. We examine movements of executive managers among a cohort of companies at two different points in time, 2006 and 2011, a period sufficient to capture performance effects. The migration patterns are conceived as a network of interfirm relationships, with a tie between two firms created by the movement of an executive manager from one firm to another between the two points in time.

With this direction, we divide the analysis of managerial migrations in two strands: A Managerial Performance Model, where residual income is an indicator of managerial performance, and a Company Value Model, where firms' net income discounted by the WACC is an indicator of firm value. This is done to examine the movement of executives from two related angles: Economic activity classifications and years of experience in the Managerial Performance Model and human resources profile in the Shareholder Value Model. The aim is to analyze if and how the economic profit of shareholder value from residual income creation, and/or its corresponding net-income-discounting WACC, yield some sort of executive migration pattern(s).

Exponential Random Graph Models in Context

Representing a network as a graph G, the summary measures, that is, the observed number of directed ties, mutual ties, transitivity paths, and so on, is called *network statistics*. In mathematical terms, an ERGM assigns probabilities to a given graph G with respect to these statistics, such that the weighted average of the Zs can be stated as (Robins & Lusher, 2013b):

$$P_{\theta}(G) = ce^{\theta_1 z_1(G)+\theta_2 z_2(G)+\ldots+\theta_p z_p(G)} \quad (1)$$

Expression (1) tells us that the probability of a graph G depends on the number of configurations (network statistics), or some functions of them, where θs are their parameters and c is a normalized constant (Robins & Lusher, 2013b). Since the inferential goal is to find data's maximal support under $z(G)$, the estimation of (1) implies solving for the moments equation of θ via Maximum Likelihood Estimation. Owing to natural data dependencies this is usually done numerically, and in our case employing the stochastic approximation technique (the Robbins-Monro algorithm) as explained in Koskinen and Snijders (2013). We also develop simulations based on parameter estimates to examine graph features in the density

distribution of (1). Observe, in order to analyze network patterns, we separate structural configurations (endogenous effects) from firm attributes (exogenous effects).

Data

The datasets used were obtained from Bureau Van Dijk's database Orbis® for the job contact details of executive managers and companies' financial statements and Eurostat for the Statistical Classification of Economic Activities in the European Community (NACE).

Using secondary data of 250 firms in Orbis® classified as large because of reporting average turnover above GBP 500 m, we collected two cross-sections of UK managers profiled as key contact executives by applying conventional job descriptions. These were identified by full name and date of birth, irrespective of sex, age, and nationality, so that two companies were attached to each executive: The first one in 2006 and the second one in 2011; hence the same set of executives was in 2006 in Company Group A (CoA) and also in 2011 in Company Group B (CoB). This originated a dyadic dataset where nodes are companies and executive migrations between companies are ties.

At this point, it is paramount to stress that the use of ERGMs and tie models in general, instead of other parametric techniques such as panel data models, is because of the existence of simultaneous interdependencies both between CoA and CoB and within CoA and CoB inherent to the network formation, which otherwise would be inefficiently estimated (for an extended analysis of the statistical issue, see Dekker, Krackhardt & Snijders, 2007).

The selection criteria to determine when any of these managers moved jobs were based on discarding any company in CoB that: (1) changed names from, merged with, or was acquired by, the one the manager was working for in CoA; (2) were subsidiaries of the company the manager was working for in CoA; and/or (3) had a common global ultimate owner (a remoter relation than parent-subsidiary, but that can mistake an employee move with a mere transfer).

On the other hand, executive managers were defined as such because of their job description; they were assumed to actively participate in decisions related to growth opportunities, based on their specialist's knowledge and experience, and its impact on the WACC as a measure of the opportunity cost of capital, and also on the fact that they were part of the board of executives. Then, the Managerial Performance Model and the Company Value

Model were specified to contrast the residual income hypothesis with other control variables.

In addition, we investigated what sort of economic activity was more influential in network formation concerning managerial performance. We also considered the impact on CoB's executive recruitments of any further work experience above a minimum three-year period in CoA. Finally, utilizing firms' financial reports, we profiled them in terms of human resource indicators such as employees' average costs, operational revenues, and shareholder funds, among others.

Model Specifications

The structural and firm attributes estimated were the result of achieving convergence of parameters in equation (1), as described in Koskinen and Snijders (2013). We attempted several specifications that settled in the social selection models shown in Table 5.3. We attempted to center a particular set of graphical configurations θ looking for maximum data support, that is, to find the Maximum Likelihood Estimation of θ. Since ERGMs do not seek to evaluate causality but to adjust the distribution in equation (1) to diverse $z(G)$, it is methodologically important to indicate that the network matrices fitted in equation (1) are adjacency matrices accounting for executive redeployments, so subsequently Tables 5.1 and 5.2 would show both the structural and firm-level Zs of the Managerial Performance Model and the Company Value Model, respectively, that fit the realizations of equation (1).

Convergence criteria break down whole networks between their main component, that is, the biggest subgraph feasible and the remaining components (subgraphs). This translated into narrowing down the Managerial Performance Model to 58 firms and the Company Value Model to 41 firms, as illustrated in Figures 5.1 and 5.2, where firms are number-coded.[1]

Let us highlight that, a posteriori, the convergent structural parameters in Tables 5.1 and 5.2 are the same, pointing out the fact that both models were drawn from the same population.

With regard to the convergent firm attributes, in the Managerial Performance Model, to investigate the specific role of economic activity in executive managers' migration, we evaluated the NACE classifications of CoA and CoB firms, which generated the dummy variables related to peer-group, industrial group, industrial sections, and industrial divisions, as defined in Table 5.1. We specify additional years of work experience in CoA as an indicator of the latent variable managerial skills. On the contrary, the residual income indicator in Table 5.1, which is calculated

Table 5.1 The managerial performance model's parameters

	Structural	2 – in – star: Two managers from different CoAs are recruited by the same CoB
		2 – out – star: Two managers from the same CoA are recruited by different CoBs
		arc: Average manager propensity to migrate companies
		path2: One manager from CoA is recruited by a CoB and a different CoA does from it
		sink: Managers leave CoA
		source: Managers are hired by CoB
	Firm – level	$ResInc_{sender}$: Residual Income, sender effect
		$CoANACE69_{sender}$: CoA firm Legal and Accounting division, sender"
		$CoBNACE47_{receiver}$: CoB firm Wholesale and retail section, receiver"
		$ExpYrsCoA_{sender}$: Additional years of work experience in CoA, sender:
		$IndGroup_{matching}$: Industrial group classification, matching"
		$PeerGroup_{matching}$: Peer group classification"

Table 5.2 The company value model's parameters

Structural	2 – in – star: Two managers from different CoAs are recruited by the same CoB
	2 – out – star: Two managers from the same CoA are recruited by different CoBs
	arc: Average manager propensity to migrate companies
	path2: One manager from CoA is recruited by a CoB and different CoA does from it
	sink: Managers leave CoA
	source: managers are hired by CoB
Firm – level	$ACPErank_{sender,receiver,diff}$:Average Cost per employee ranked, sender, receiver, differ
	$AORPErank_{sender,receiver,diff}$: "Operating Revenues ratio""",""
	$ACBPErank_{sender,receiver,diff}$: "Cost to Operating Revenues ration""",""
	$ACBPErank_{sender,receiverdiff}$: "Cost-Benefit"",""
	$APPE_{ranksender,receiver,diff}$: "Profits """,""
	$ASPErank_{sender,receiver,diff}$: "Shareholder Fund""",""
	$COVFPrank_{sender,receiver,diff}$: Company Value period '02–06 ".""
	$COVSPrank_{sender,receiver,diff}$: Company Value period '07–11 ".""
	$COVrank_{sender,receiver,diff}$: Company Value ",""

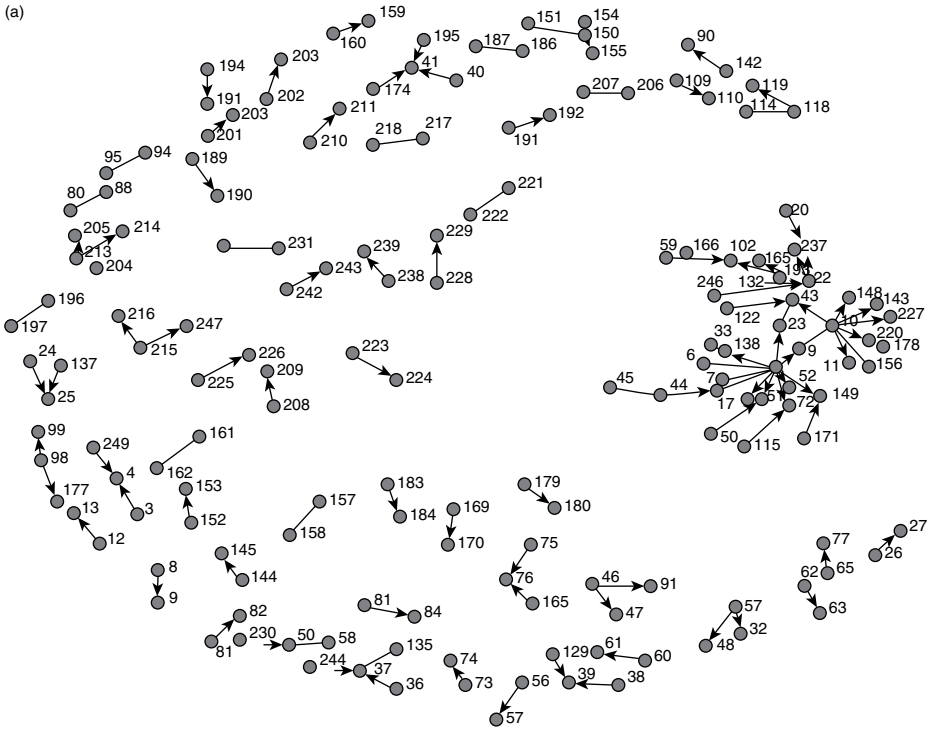

Figure 5.1 (a) Managerial performance model and (b) Company value model—all components.

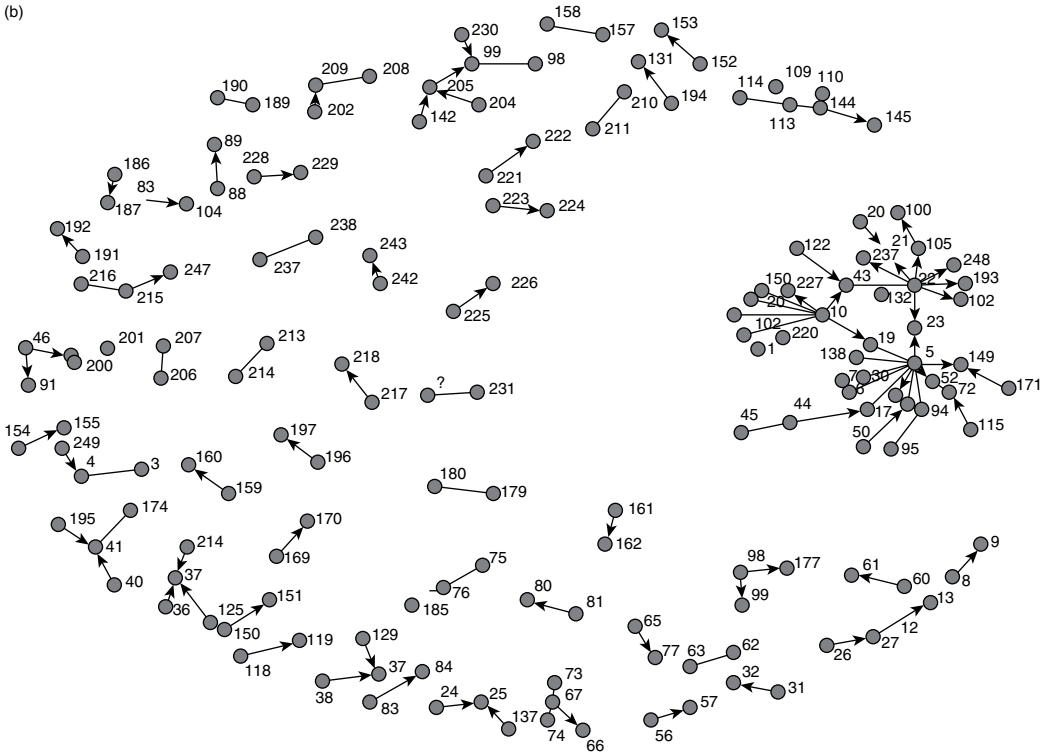

Figure 5.1 Continued

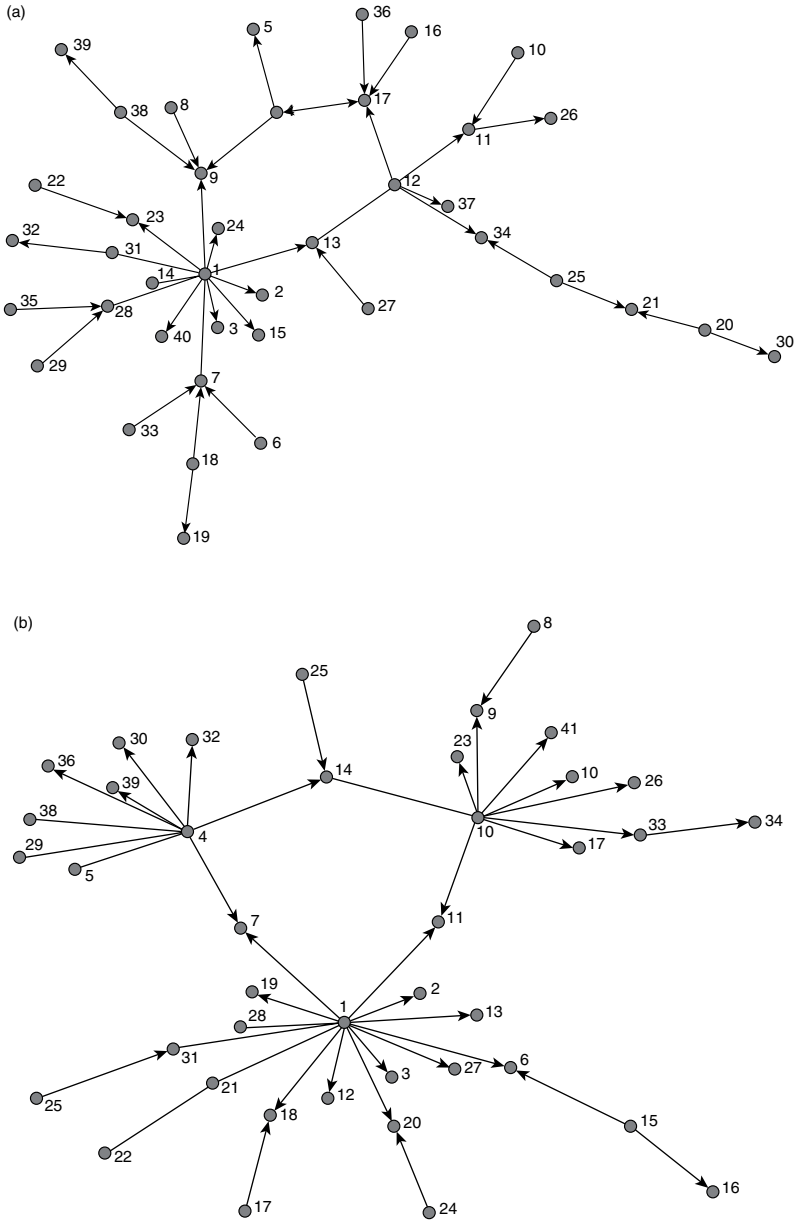

Figure 5.2 (a) Managerial performance model and (b) Company value model—main components.

following a standard residual income model (Brealey, Myers & Allen, 2011), is given by:

$$\mathbf{RI}_h^k = \left(\mathrm{ROE}_h^k - \mathrm{r}_h^k\right)\mathrm{IC}_h^k \tag{2}$$

Where, for CoA companies screened in 2006 and for CoB companies screened in 2011, averages are taken for the period 2002–11. Accordingly:

k: Company Group A (CoA) or Company Group B (CoB)
h: Company i (belonging to CoA) or Company j (belonging to CoB)

In particular,

RI: Average Residual Income (economic profit)
ROE: Average Return on Equity $= \dfrac{\text{Earnings per share}}{\text{Bookequity per share}}$; calculated using Profits and Losses before taxes
r: Average Cost of Capital (estimated as a WACC)
IC : Average Invested Capital (as per balance sheet)
= Average Fixed Assets + Average Current Assets
+ Average Other Current Assets – (Average Current Liabilities
+ Average Other Current Liabilities)

Consequently, migration patterns in the Managerial Performance Model are examined around the indicator variable in equation (2). The subscripts sender and matching, as the subscripts receiver and difference stand for the network statistics that converged (the Zs); namely, the counts of attribute configurations where, respectively, sent executives, recognized as activity-based effects, received executives, recognized as popularity effects, and some sort of differences/similarities among firms recognized as homophily signs, statistically held.

For specifying the Company Value Model covariates in Table 5.2, we reasonably assume that 0 ≤ Economic Profit, that is, executive managers at least do not destroy firm value, which implies in equation (2) that ROE > r as long as IC > 0, which in our case holds. Hence we could rearrange equation (2) such that WACC can approximate r, by fitting the following OLS regression separately for CoA and CoB:

$$(\mathrm{ROExIC})_h^k = \mathrm{r}_h^k \mathrm{IC}_h^k + \mathrm{e}_i \tag{3}$$

So that $\hat{r}_h^k$ is a proxy to the cost of capital r_h^k in equation (2), and e_i is the error term. Subsequently, RI is evaluated at r_i^{CoA} for all i companies in CoA and at r_j^{CoB} for all j companies in CoB. On the other hand, a proxy to company value (CV) was used, to know:

$$CV_h^k = \frac{NI_h^k}{\hat{r}_h^k} \tag{4}$$

Where NI_h^k is the Net Income of company h in group k, as defined in financial statements. These are used as a proxy to the Free Cash Flows of the firms in CoA and CoB, averaged during periods '02–'06 and '07–'11, respectively. Observe, the value of the firm regarding shareholder value, according to equation (4), is seen here as a perpetuity, which even though convenient due to data restrictions, rules out the possibility of change in the flows.

Because their continuous time version did not converge, percentiles were taken on the variable indicators of equation (4) for both groups, and then these were recoded from 1 to 10, that is, 1 percent is 1 and 100 percent is 10, which basically ranks firms' Company Values. Finally, in Table 5.2, the remaining indicators would stand for human resource firm performance in financial accounting terms, that is, employee's averages, which also due to non-convergence in their continuous version were ranked and interpreted in percentiles.

Analysis of Results

In estimating the Managerial Performance Model and the Company Value Model by fitting equation (1), as previously mentioned, we found convergence only at the main component level. However, we simulated all components of the networks based on these main component estimates; for analytical convenience results are so reported. It is important to clarify that the Goodness-of Fit (GoF) in ERGMs is called a *heuristic* GoF, which is a simulation of how, based on fitted effects, central or extreme nonfitted effects in the distribution of (1) are based on fitted effects, such that if the graph feature is not extreme, this might have arisen from the estimated model and so it can be explained by it (Koskinen & Snijders, 2013). The approximate critical value is t-ratio ≤ |2.0| of a standard normal deviation, then any value outside this range is considered extreme and hence not a representable graph under the model examined. Estimations and simulations were run using the open access software pNet (Wang, Robins & Pattison, 2009).

Table 5.3 ERGMs main component estimations

Parameters	*estimate*	*standard error (SE)*	*convergence statistic*
Managerial Performance Model			
2-in-star	0.19	0.19	−0.03
2-out-star	−0.26	0.25	−0.01
arc	−5.83*	0.71	−0.08
path2	−0.04	0.21	0.04
sink	2.56*	0.80	0.02
source	3.08*	0.85	−0.07
CoANACE69_sender	4.99*	2.26	0.00
CoBNACE47_receiver	0.60	0.39	−0.04
ExpYrsCoA_sender	0.25*	0.08	−0.04
IndGroup_matching	0.40	0.66	0.02
PeerGroup_matching	−0.28	1.10	−0.01
ResInc_sender	0.11*	0.05	−0.01
Company Value Model			
2-in-star	−5.10*	2.04	0.02
2-out-star	−0.10	0.12	0.05
arc	−31.83*	2.36	0.05
path2	−0.30	0.54	−0.07
sink	−0.46	1.80	0.07
source	8.04*	1.91	−0.07
ACBPErank_diff	−0.64*	0.28	0.02
ACBPErank_receiver	−0.03	0.37	0.05
ACBPErank_sender	1.54*	0.49	0.05
ACORPERrank_diff	−0.13	0.19	0.05
ACORPERrank_receiver	0.39	0.36	0.02
ACORPERrank_sender	1.44*	0.43	0.01
ACPErank_diff	0.24	0.19	0.03
ACPErank_receiver	0.48	0.35	0.02
ACPErank_sender	0.24	0.45	0.01
AORPErank_diff	0.45	0.23	0.02
AORPErank_receiver	−0.19	0.41	0.05
AORPErank_sender	−0.36	0.71	0.01
APPErank_diff	−0.11	0.23	0.01
APPErank_receiver	−0.10	0.40	0.05
APPErank_sender	0.74	0.45	0.05
ASPErank_diff	0.01	0.17	0.06
ASPErank_receiver	−0.06	0.37	0.06
ASPErank_sender	−1.06	0.61	−0.01
COVFPrank_diff	−0.17	0.27	0.08

Continued

Table 5.3 Continued

Parameters	*estimate*	*standard error (SE)*	*convergence statistic*
COVFPrank_receiver	0.10	0.48	0.02
COVFPrank_sender	−0.78	0.46	0.06
COVrank_diff	−17.13*	1.16	0.00
Company Value Model (CVM)			
COVrank_receiver	−16.28*	1.28	0.06
COVrank_sender	20.86*	1.23	0.05
COVSPrank_diff	−0.08	0.29	−0.03
COVSPrank_receiver	−0.53	0.40	0.07
COVSPrank_sender	−1.25*	0.60	0.03

*Significant effect (i.e. parameter estimate is greater than two times the standard error in absolute value)

Estimation of the Main Components[2]

The Managerial Performance Model[3]

For managerial performance alone in Table 5.3, focusing on significant positive parameters, the stronger network formation pattern lies in firm attributes; the industrial classification group "Accounting and Legal Activities" (CoANACE69_sender) bears a high sender (activity-based) effect. This is followed to a greater extent by structural source and sink patterns and to a lesser extent by two other activity-based configurations: Years of experience in CoA (ExpYrsCoA_sender) and residual income added (ResInc_sender). Namely, a managerial network was more likely to emerge on the basis of previous work experience in this sort of professional services activity than on years of experience or even residual income indicators.

In terms of GoF, observe in Tables 5.4 and 5.5 that the pattern involving executives whose CoA firm belonged to "Accounting and Legal Activities," even though with the strongest firm attribute, it only replicated 2 out of possible 10 configurations,[4] whereas years of experience in CoA and residual income were replicating, respectively, 11 out of possible 13 continuous firm attribute patterns. Structural patterns are rather underrepresented, though. Significantly negative ties (arcs) signal the lack of an endogenous migration tendency, along with the only positive significant structures, source, and sink, which signal more or less a similar natural propensity to release and host executives; nevertheless, as many as 21 out of possible 42 self-organizing patterns could not arise from this model.

In other words, the GoF points out that the Managerial Performance Model represents exogenous network formation reasonably well because

many firm-level graph features could be generated from the model fitted, whereas it does not replicate well self-organizing (endogenous) patterns. Consequently, managerial migration tends to be firm attribute related, that is, executive managers formed networks when they migrated because of particular firm attributes such as the industrial classification of the company they had worked for, years of experience in it, and residual income track record. However, endogenous propensities were not as easily replicated. Also, from Table 5.4, key degree distribution features, namely, the Standard Deviation (SD), in-degree and out-degree skewness, and the correlation coefficient between in-degree and out-degree distributions fit the data.

Table 5.4 Managerial performance model GoF selection–structural parameters selection

	Count	*Mean*	*Standard Deviation (SE)*	*GoF*
Degree Distribution Parameters				
Skew in-degree dist	1.35	1.07	0.44	0.65
Skew out-degree dist	3.85	3.49	0.18	2.01
Std Dev in-degree dist	1.09	1.07	0.13	0.21
Std Dev out-degree dist	2.43	2.42	0.2	0.04
CorrCoef in-out-degree dists	−0.35	−0.37	0.04	0.40
Structural Parameters				
1inAout-star(2.00)	4	2.3	2.35	0.72
2-out-star	168	168.23	29.26	−0.01
3-in-star	17	14.73	12.85	0.18
3-out-star	532	490.91	138.43	0.3
A2P-D(2.00)	168	163.88	27.77	0.15
A2P-DU(2.00)	101	96.67	15.12	0.29
A2P-T(2.00)	4	3.6	5.36	0.07
A2P-TD(2.00)	86	83.74	14.37	0.16
A2P-TDU(2.00)	68.67	65.64	10.43	0.29
A2P-TU(2.00)	19	16.53	5.29	0.47
A2P-U(2.00)	34	29.45	8.53	0.53
Ain1out-star(2.00)	3.5	2.98	4.26	0.12
AinAout-star(2.00)	3.5	1.85	1.75	0.95
AinS(2.00)	26.5	26.81	5.97	−0.05
AoutS(2.00)	57.02	59.89	6.56	−0.44
Arc	58	57.96	3.81	0.01
path2	4	3.61	5.37	0.07
Source	21	20.9	1.99	0.05
Sink	34	34.21	2.07	−0.1

Table 5.5 Managerial performance model GoF selection-firm attribute parameters

	Count	*Mean*	*Standard Deviation (SE)*	*GoF*
Binary Parameters				
CoANACE69_out2star	163.00	159.01	28.93	0.14
CoANACE69_sender	32.00	32.02	2.84	−0.01
Continuos Parameters				
ExpYrsCoA_diff	204.65	214.91	24.55	−0.42
ExpYrsCoA_diff_reciprocity	176.09	176.09	0.16	−0.04
ExpYrsCoA_in2star	8.17	8.63	22.08	−0.02
ExpYrsCoA_out2star	640.06	650.17	115.12	−0.09
ExpYrsCoA_path2	10.15	11.75	23.29	−0.07
ExpYrsCoA_prod	55.76	91.46	71.22	−0.50
ExpYrsCoA_prod_reciprocity	40.76	40.81	0.99	−0.05
ExpYrsCoA_receiver	13.37	25.68	16.25	−0.76
ExpYrsCoA_sender	209.53	210.83	24.14	−0.05
ExpYrsCoA_sum	222.89	236.50	26.25	−0.52
ExpYrsCoA_sum_reciprocity	189.63	189.66	0.48	−0.05
ResInc_diff	318.49	308.48	30.33	0.33
ResInc_diff_reciprocity	269.12	269.13	0.22	−0.05
ResInc_in2star	29.08	27.98	29.81	0.04
ResInc_out2star	1239.29	1189.40	218.87	0.23
ResInc_path2	7.12	14.82	37.68	−0.20
ResInc_prod	263.46	287.13	144.98	−0.16
ResInc_prod_reciprocity	235.51	235.64	2.66	−0.05
ResInc_receiver	50.76	56.10	25.54	−0.21
ResInc_sender	302.14	302.21	30.99	0.00
ResInc_sum	352.90	358.31	33.86	−0.16
ResInc_sum_reciprocity	298.38	298.42	0.76	−0.06

The Company Value Model

Starting with significantly positive parameters, company value on its own yields an important network pattern in the company value sender effect (COVrank_sender), as reported in Table 5.3. This means that managerial networks may emerge through executive hires mainly because some companies in CoA have visible value if ranked with respect to the rest of the group. In fact, firm attributes point out equivalently the relevance of both activity-based average cost-benefit per employee (ACBPErank_sender) and average ratio of operating revenue to cost (ACORPERrank_sender); these patterns are less intense than the positively significant source structural effect, though, which suggests that some firms tend to "release" executives.

With regard to significantly negative parameters in Table 5.3, observe ties (arcs) signal a lack of endogenous migration patterns; nonendogeneity is also reinforced by adverse 2-in-star (no pattern of single firm perceiving two executives from two different firms). With respect to attributes, firms neither viewed company value differences (COVrank_diff), nor company popularity (COVrank_receiver) or firm predominance in the period 2007–11 (COVSPrank_sender) as a motivation for network emergence. Analogously, company differences in average cost-benefit per employee (ACBPErank_diff) did not foster network formation. However, if we were to compare covariates, it would seem that COVrank is ruled by overall significantly negative network effects, whereas ACBPErank is slightly by positive ones; therefore, seen as covariates without distinguishing type of

Table 5.6 Company value model GoF-structural parameters

Configuration	*Count*	*Mean*	*Standard Deviation (SE)*	*GoF*
Degree Distribution Parameters				
Std Dev in-degree dist	0.71	0.71	0.05	0.04
Std Dev out-degree dist	2.86	2.84	0.28	0.09
Skew out-degree dist	3.32	3.27	0.30	0.14
CorrCoef in-out-degree dists	−0.47	−0.47	0.04	0.09
Structural Parameters				
1inAout-star(2.00)	2.00	1.88	1.76	0.07
2-in-star	10.00	10.07	2.23	−0.03
2-out-star	164.00	162.85	32.76	0.04
3-out-star	532.00	532.99	184.73	−0.01
A2P-D(2.00)	164.00	160.47	31.79	0.11
A2P-DU(2.00)	87.00	84.31	16.11	0.17
A2P-T(2.00)	2.00	2.35	2.63	−0.13
A2P-TD(2.00)	83.00	81.41	16.04	0.10
A2P-TDU(2.00)	58.67	56.99	10.84	0.15
A2P-TU(2.00)	6.00	5.25	1.69	0.44
A2P-U(2.00)	10.00	8.16	1.71	1.08
Ain1out-star(2.00)	2.00	2.01	2.29	0.00
AinAout-star(2.00)	2.00	1.58	1.41	0.30
AinS(2.00)	9.50	10.05	2.22	−0.25
AoutS(2.00)	53.016	53.578	6.238	−0.09
Arc	41.00	40.98	2.60	0.01
path2	2.00	2.35	2.64	−0.13
Sink	30.00	29.83	1.57	0.11
Source	9.00	9.07	1.36	−0.05

patterns, higher-ranked cost-benefit per employee generates more network formation than higher-ranked company value.

The GoF of the Company Value Model in Tables 5.6 and 5.7 shows that managerial migration is not structural but firm attribute related. Again, 21 out of possible 42 self- organizing configurations would not be represented by this data; then structurally speaking this model moderately describes endogenous graph features. But if we turn to the firm attribute parameters, the model improves, since all significant firm-level attributes could replicate 11 of the 13 potential graphs. This underlines that large companies in the United Kingdom might be inclined to consider both company value and cost-benefit analysis (including operating revenue to cost ratio) when recruiting executive managers, but the net effect inclines to the latter irrespective of network patterns. The GoF indicates too that all degree distribution parameters except for the in-degree distribution skewness fit the data.

Model Comparisons of Main Component Estimations

If we were to compare managerial migration specifications with the Managerial Performance Model, the Company Value Model would be more complete because firm-level patterns are better represented. Structurally speaking though, both models in Tables 5.4 and 5.6 could replicate underlying structures moderately but identically, which means that the same structures could emerge from these two different data sets. Besides, Table 5.3 shows two significant structural similarities between the Managerial Performance Model and the Company Value Model: A positive source pattern and a negative arc pattern. These basically tell us that even though managerial migrations in the case under study were not self-organizing processes, some companies from which executive managers migrated were conspicuous providers.

Observe that both the Managerial Performance and the Company Value models were drawn from the same population of managerial migrations, their convergence parameters were structurally identical, and their GoF composition was also identical, which may be explained because of the fact that firms in the Company Value Model's main component are a subset of the Managerial Performance Model, as illustrated in figures 5.1 and 5.2.

Particularly relevant to the nested configurations in Figures 5.1 and 5.2 is that attribute-related factors in Tables 5.3, 5.5, and 5.7 point out a positively significant and well-fit similarity between the Managerial Performance Model and the Company Value Model: There is evidence of related activity-based effects; specifically, a sender effect is backed up both when managerial performance (ResInc_sender) improves and company value (COVrank_sender) increases. This shows that there are some firms in CoA that are prominent

Table 5.7 Company value model GoF-firm attribute parameters

Continuous Configuration	*Count*	*Mean*	*Standard Deviation (SE)*	*GoF*
ACBPErank_diff	75.00	74.97	8.49	0.00
ACBPErank_diff_reciprocity	62.00	62.00	0.07	−0.04
ACBPErank_in2star	51.00	50.35	12.13	0.05
ACBPErank_out2star	1001.00	1004.54	204.50	−0.02
ACBPErank_path2	12.00	14.80	17.10	−0.16
ACBPErank_prod	1323.00	1324.23	106.65	−0.01
ACBPErank_prod_reciprocity	1172.00	1172.09	2.02	−0.05
ACBPErank_receiver	207.00	206.64	15.51	0.02
ACBPErank_sender	258.00	257.86	18.12	0.01
ACBPErank_sum	465.00	464.51	32.15	0.02
ACBPErank_sum_reciprocity	410.00	410.03	0.60	−0.05
ACORPERrank_diff	102.00	101.84	11.36	0.01
ACORPERrank_diff_reciprocity	86.00	86.01	0.13	−0.04
ACORPERrank_in2star	62.00	60.54	13.63	0.11
ACORPERrank_out2star	927.00	900.96	216.22	0.12
ACORPERrank_path2	7.00	9.88	13.22	−0.22
ACORPERrank_prod	1186.00	1184.03	97.17	0.02
ACORPERrank_prod_reciprocity	1080.00	1080.04	0.96	−0.04
ACORPERrank_receiver	232.00	232.07	15.28	−0.01
ACORPERrank_sender	208.00	208.40	17.31	−0.02
ACORPERrank_sum	440.00	440.47	29.44	−0.02
ACORPERrank_sum_reciprocity	392.00	392.02	0.40	−0.04
ACPErank_diff	108.00	107.22	11.54	0.07
ACPErank_diff_reciprocity	88.00	88.01	0.20	−0.04
ACPErank_prod_reciprocity	1046.00	1046.05	1.20	−0.04
ACPErank_receiver	223.00	222.68	16.08	0.02
ACPErank_sender	219.00	219.48	17.44	−0.03
ACPErank_sum	442.00	442.15	29.70	−0.01
ACPErank_sum_reciprocity	388.00	388.02	0.48	−0.04
COVrank_diff	116.00	115.95	10.00	0.01
COVrank_diff_reciprocity	108.00	108.00	0.06	−0.03
COVrank_in2star	60.00	56.21	12.28	0.31
COVrank_out2star	1366.00	1349.62	278.23	0.06
COVrank_path2	13.00	15.52	18.95	−0.13
COVrank_prod	1658.00	1645.36	126.38	0.10
COVrank_prod_reciprocity	1428.00	1428.08	1.90	−0.04
COVrank_receiver	208.00	207.93	14.83	0.01
COVrank_sender	324.00	323.74	22.32	0.01
COVrank_sum	532.00	531.67	36.54	0.01

Continued

Table 5.7 Continued

Continuous Configuration	*Count*	*Mean*	*Standard Deviation (SE)*	*GoF*
COVrank_sum_reciprocity	464.00	464.03	0.58	−0.05
COVSPrank_diff	92.00	92.01	8.82	0.00
COVSPrank_diff_reciprocity	82.00	82.00	0.07	−0.04
COVSPrank_in2star	57.00	54.46	12.11	0.21
COVSPrank_out2star	1236.00	1220.63	251.00	0.06
COVSPrank_path2	10.00	12.27	15.52	−0.15
COVSPrank_prod	1500.00	1499.36	110.04	0.01
COVSPrank_prod_reciprocity	1321.00	1321.07	1.53	−0.04
COVSPrank_receiver	211.00	210.82	14.65	0.01
COVSPrank_sender	291.00	290.87	19.90	0.01
COVSPrank_sum	502.00	501.69	33.55	0.01
COVSPrank_sum_reciprocity	442.00	442.02	0.52	−0.04

in networking company value by having their managers migrating to other companies, likely because their optimal WACC estimation would translate into more residual income. In other words, executive migrations among large firms in the United Kingdom for the cohort under study were the result of a sender effect related to managerial performance and firm value, namely, a managerial migration network emerged according to our results because of a firm performance assessment process.

Simulation of All the Components of the Networks

Figures 5.3, 5.4, and 5.5 illustrate simulation results for all network components of the Managerial Performance Model and Company Value Model, respectively, based on the main components estimated parameters displayed in Table 5.3.

We analyze the ERGM behavior of the in- and out-degree distributions for both managerial migration models, simulating them with different Starting Graph Density (SGD). First, by inspecting Figures 5.3 and 5.4, regardless of the SGD, observe that if these were stationary distributions (Koskinen & Snijders, 2013), the parameters (i.e., the SD and skewness of the in-degree and out-degree distributions) of the all-components Company Value Model appeared to have settled in convergence values after one-thousand iterations, which is not evident for the Managerial Performance Model. Hence, if we were to examine managerial migration patterns in the whole network, the

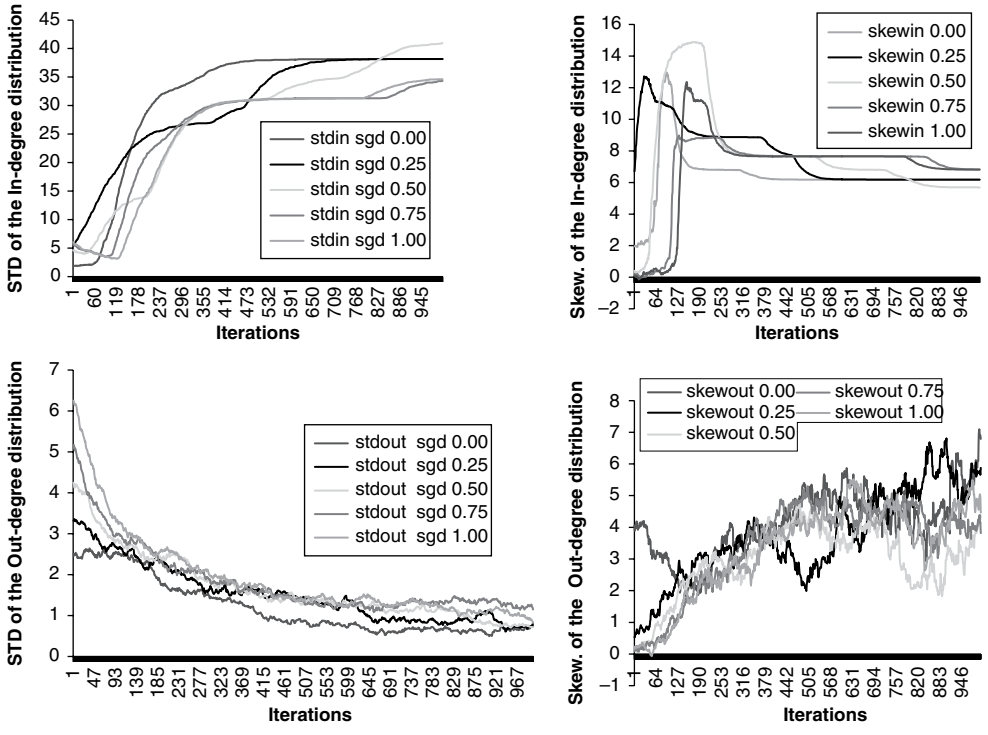

Figure 5.3 The managerial performance model all components simulation. Standard deviation and skewness of in degree and out degree distributions.

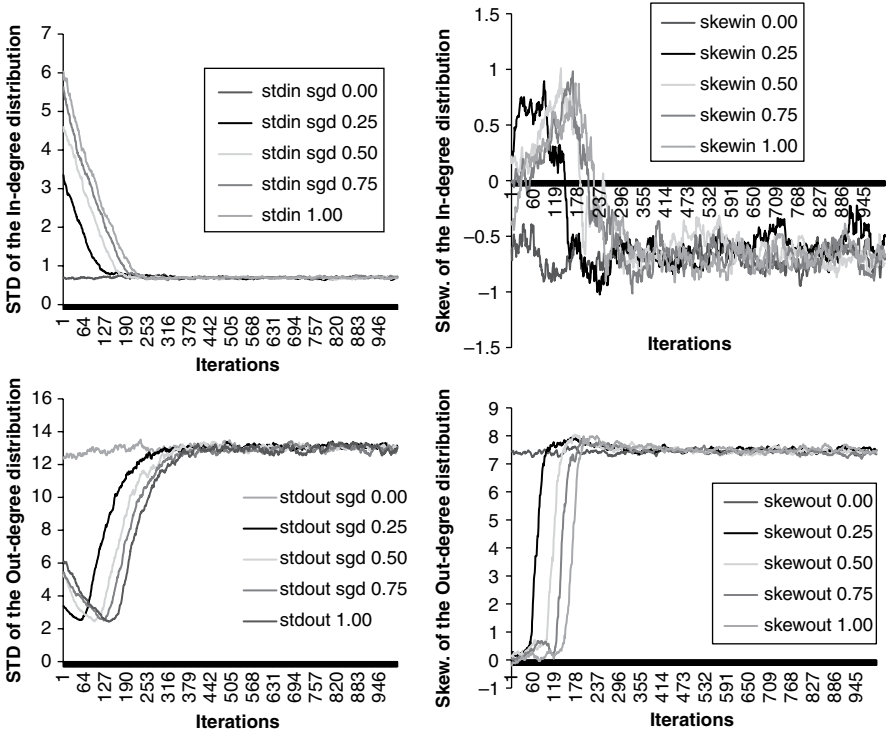

Figure 5.4 The company value model all components simulation. Standard deviation and skewness of in degree and out degree distributions.

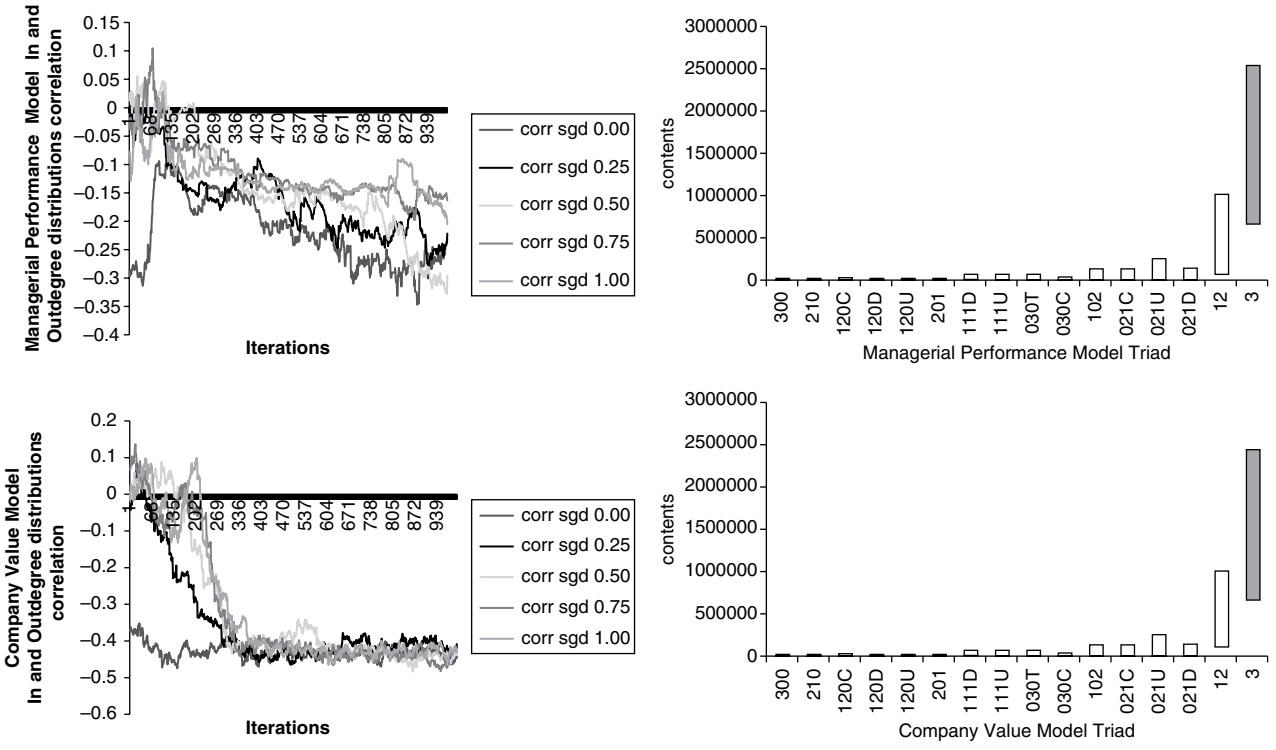

Figure 5.5 All components simulation. Correlation of the in degree and out degree distributions and triad census.

Company Value Model would be more likely to reproduce graph features widely since the in- and out-degree distributions showed more stability simulating the main component estimated parameters.

In Figure 5.5 it is particularly important to note, even though the triad censuses render similar results for both models, the counts of graphs are clearer (nonspot) for the Company Value Model than for the Managerial Performance Model. In fact, for the simulation at different SGDs in the all-components Company Value Model, increasing counts of configurations 12 (single executive migration), 102 (executives mutually connecting two firms), 021C (executives moving between two firms), 021U (two executives moving into the same firm), and 021D (two executives out of the same firm) predominate over the empty graph (decreasing counts of configuration 3), which indicates that executives may have migrated following some sort of transitivity pattern.

On the other hand, note also the negative in and out-degree distribution autocorrelation and the fact that again only the Company Value Model converges to a stable value of it after a thousand iterations, while this does not happen with the Managerial Performance Model. Therefore, features in Figures 5.4 and 5.5 indicate that the Company Value Model would portray the whole managerial network better than the Managerial Performance Model in the case under study.

Discussion on Background Research

Our results add to Marshall and Heffes (2006) and Pfeffer & Leblebici (1973), in that longer length of service with the originator enhances managerial capabilities, concomitant to a higher residual income generation track record, which contradicts lower performance at the point of origin positively associated with executive migration, as held by Dedman (2003), Rao & Drazin (2002), and Grusky (1963). It is also interesting to underline that results corroborate the role played by the economic activity classification of the firm of origin, in this case prominently Legal and Accounting, which point out at the need for a specific skill set in a particular strategic situation, as found in Earl & Scott, (1999), Datta & Rajagopalan (1998), and Leggatt (1980). In general, using network analysis, we have found evidence that accrues to the Managerial Performance literature from the viewpoint of the transformation of business practices executive migration may give place to

Specifically, our findings are unique to the Human Capital and Assets literature in that from the company value stand point, we have also found proof of networked business profitability based on an interorganizational

valuation process that relies on managerial performance. This social selection mechanism prevails over a strong source structural effect in the network, which indicates an exogenous exit from high-ranked firms, more than systematic recruitment. Then we have found support to our hypothesis that company value of the originating firm is used as a heuristic proxy of the value-adding capabilities of managers. We have also encountered that the specific value-adding activities of cost-benefit per employee and operating revenue to cost per employee are valued independently, lending further weight to our hypothesis.

Conclusions

Because of the extensive importance of firm attributes in network emergence, the models studied for the cohort observed in 2006 and 2011 have revealed the social selection nature of recruitment in the managerial migrations among large firms in the United Kingdom. Initially we postulated that "keeping other things equal," executive migrations should affect company value essentially because human capital is a "transferrable asset" that enhances economic profit. In our study firm value is shown to impact executive migration through managerial performance "emulation," which is driven by an interfirm valuation process. In this respect, we need to mention the existence of social influence models (Robins, Pattison & Elliott, 2001b), the opposite of social selection, namely, attribute occurrence explained by network effects. Albeit we limit ourselves to adjudicate the results found to social selection, in cross-sectional tie models it is difficult to differentiate between these two sides of actor attributes, and hence a longitudinal analysis should be carried out in order to discern which one prevails (Robins & Daraganova, 2013).

Nonetheless, our aim was to analyze if and how the economic profit of shareholder value from residual income addition, and/or its corresponding net-income-discounting WACC, yielded some sort of executive migration pattern(s). By examining economic activity classifications and additional years of work experience in CoA as an indicator of managerial skills in the Managerial Performance Model, we found that a managerial network was more likely to emerge on the basis of longer years of experience and residual income track record than on work experience in Legal and Accounting consulting activities. Without distinguishing types of patterns in the Company Value Model, however, we found that higher-ranked cost-benefit per employee as well as higher-ranked operating revenue to cost per employee generated more network formation than higher-ranked company value.

Hence, analyzing them separately, the Managerial Performance Model and the Company Value Model indicate that longer years of experience and residual income track record along with effective cost-benefit evaluation and operating revenue to cost per employee could explain overall recruitment. If we were to compare managerial migration specifications with the Managerial Performance Model, though, the Company Value Model would be more complete because firm attributes are better represented. Structurally speaking both models underline the weakness of endogenous network formation, though.

On the other hand, analyzing them simultaneously given that the main component of the Company Value Model is a subset of the Managerial Performance Model, it is particularly relevant that both models have in common an activity-based network effect: When managerial performance improved, company value increased. This shows that there were some firms in CoA that were prominent in networking company value by having their managers migrate to companies in CoB likely because their optimal WACC estimation would have translated into more residual income. In other words, distinguishing patterns, executive migrations among large firms in the United Kingdom for the cohort under study, were the result of a sender effect related to managerial performance and firm value, namely, the managerial network emerged because of a firm performance assessment process.

Finally, examining all the components of the networks, we find the simulations showing that the Company Value Model would be more likely to reproduce widely migration patterns than the Managerial Performance Model, making it the best model fit.

Notes

1. The convergence statistic should fall between −0.10 and +0.10 (Robins & Lusher, 2013b).
2. As in a logistic regression, conditional odd ratios could be calculated using model estimates to have a more accurate appreciation of response probabilities. However, this would make sense only under the assumption that ties compared are in an identical neighborhood of ties, which might not be the case. For sake of exposition, we follow the usual practice in ERGM analysis, which is to concentrate on examining agent-level behaviour by contrasting it with structural-level behaviour (see examples in Lusher, Koskinen & Robins, 2013, chapters. 12–14).
3. Note, non-significant parameters are considered as convergent but not network triggers.
4. For calculating this ratio, both endogenous effects (i.e., arc, 2-in-star, 2-out-star, etc.) and exogenous effects (the ones ending in _sender, _out2star,_path2, etc.), are counted and then compared to the total feasible given by pNet.

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CHAPTER 6

Intangible Assets: Current Requirements, Social Statements, Integrated Reporting, and New Models

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Literature Review

The concept of intangibles is fundamental in current economies. Their evaluation and the knowledge of their importance by third parties are linked to the issues of recognition and measurement of these assets. Despite the growing importance of intangibles to reach and maintain a competitive advantage in a complex environment, current financial statements do not provide adequate disclosure of some intangibles, especially for those that are not characterized by "identifiability" or "control." Nakamura (2001) shows that the estimates of the corporate sector's investment in intangible assets in the US market, calculated in three different ways, converge around 1 trillion dollars a year. Moreover, an important part of them are not recognized because they do not reflect current recognition requirements defined in US GAAP.

The problem is the same: for instance, intangibles may be recognized in European financial statements only if they meet the mandatory requirements of International Accounting Standard (IAS) 38 that define intangible assets as controlled, identifiable, nonmonetary assets without physical

substance. Otherwise, they are included in goodwill, which expresses the company's ability to generate income through their own intangible assets that cannot be individually identified, measured, or recognized in financial statements, such as human capital. Goodwill may be recognized in financial statements only if it is acquired by a third party.

An important part of internally generated goodwill is human capital, which is defined by Meritum (2002) as "the knowledge that employees take with them when they leave the firm. It includes the knowledge, skills, experiences and abilities of people. Some of this knowledge is unique to the individual, some may be generic. Examples are innovation capacity, creativity, know-how and previous experience, teamwork capacity, employee flexibility, tolerance for ambiguity, motivation, satisfaction, learning capacity, loyalty, formal training and education." Generally, human capital does not meet current requirements for recognition from the point of view of identifiability and control, but, in spite of this, there remains an important part of intangible value. Recent studies on Integrated Reporting may solve this problem, as we see later. This aspect will have a very important role if someone wants to analyze the relationship between market value and book value.

There is a vast literature belonging to different disciplines on the role, evaluation, and accounting of intangible assets and on the relationship between book and market value, as a possible indicator of the magnitude of intangibles. For this reason, this section focuses only on the part of the literature that is closely linked to the mathematical model proposed and used to measure the relationship between book and market value. Among the numerous works regarding the role and definition of intangibles, the following have constituted useful points of reference: Lev (2001), who defines the characteristics and the value of intangible assets; Lev and Daum (2004); Damodaran (2009) who analyze the role of these assets in the evaluation of a firm; and Zéghal and Maaloul (2011).

The growing importance of investments and development of nonphysical assets for internal decision making and control purposes gives rise to questions about the relationship between intangibles and company performance. For example, Ittner (2011) provides statistical evidence on the relationship between the internal measurement of intangibles and economic performance of firms. Other studies have investigated the same relationship, including Crook et al. (2011), Hsu and Sabherwal (2011), Lock Lee, Guthrie, and Gallery (2009), and Zéghal and Maaloul (2011).

Some reasons in favor of the usefulness of internal measurement of intangible assets have been identified by Andriessen (2004). The author states that investments in this class of resources can improve management of specific

firm strategies and help in monitoring the effects of actions. The same results have also been achieved by Banker, Potter, and Srinivasan (2000); Campbell (2008); Said, Hassabelnaby, and Wier (2003).

In recent years, research on tools for measuring the contribution of intangible assets in company management provides several solutions based on different methodologies. The study of Karl-Erik Sveiby (Sveiby, 1997) can be considered a milestone and suggests four approaches to measure intangibles: Direct Intellectual Capital Methods, Market Capitalization Methods, Return on Assets Methods, and Scorecard Methods. Although each of them has different advantages and disadvantages, none of them is satisfactory for all measuring purposes.

Although intangible assets represent both an important input and output to be disclosed in financial statements (Chen and Lin, 2004), until now financial statements have not been able to provide proper disclosure on intangibles from the investor's perspective. Several problems still affect accounting for intangible assets: different accounting rules are followed; accounting methods applied for purchased intangible assets are inconsistent with accounting methods used for internally generated intangibles; and accounting rules for specific classes of intangibles are absent. Some requests for a specific accounting model for human capital are made by practitioners and experts. A possible consequence of this set of accounting rules could be a partial deterioration in the information content of key financial statement items.

In order to evaluate the effect of the mismatch in accounting rules for intangibles, Lev and Zarowin (1999) estimate the information content of earnings announcements based on the correlation between the announcements and the change in stock prices. Chan, Lakonishok, and Sougiannis (2001) provide evidence on a systematic undervaluation of companies that are intensive in intangibles. Gains misallocated to insiders, because of huge information asymmetry in companies with high levels of intangibles spending (Aboody and Lev, 2000), is another consequence of the mismatch in existing accounting rules for intangibles.

Recent studies on the accounting and reporting issues of intangible assets are Hunter (2012) and Wyatt and Frick (2010). Adams (2008) analyzes the relationship between corporate social responsibility and reputational risk management; European Federation of Financial Analysts Societies (2009) focuses on the integration problem relating to traditional information and a set of intangible Key Performance Indicators (KPIs). On this issue, the Global Reporting Initiative (2009) defines both guidelines in the application of KPIs and the main stakeholders and joined KPIs. The analysis of these KPIs is an important part of the model proposed in the following sections.

In this review it is important to remember the starting point of this kind of study, which is Kalecki's assumption according to which "the rate of the investment decisions of a single entrepreneur depends on his capital accumulation and on the velocity of change of marginal net profitability" (Kalecki, 1937). This principle shows that, even in a perfectly competitive market, risk increases with investment both for economic and financial reasons: the effect of risk is proportional to the weight that the investment has for the equity investor. Two companies (the first only slightly exposed to the tightening of the income statement, the second with higher fixed costs) with the same overall profits, though differently distributed over time, will have a different degree of exposure to risk. In fact the second firm is more exposed to the risk of fluctuations in dividends. This affects the valuation ratio and could have negative consequences on the company market value. On this topic, Fama and Kennet (1992, 1993, 1995, and 1998) investigated the predictive capabilities of financial statement data—in particular considering the information content of the book value ratio—and the price of the underlying equity security. Other authors studied the reactions of share prices to information publicly released in firms' financial statements (Daniel and Titman, 2006; De Bondt and Thaler, 1985; De Bondt and Thaler, 1987).

At the end of this chapter, considering the wide literature on firm valuation and intangible assets, an evaluation model focused on the evolution of the ratio between book and market value is presented in order to identify some common factors that justify why recent market prices have often been lower than their book value. This analysis is particularly relevant considering the financial crisis and the "loss of reputation" issue.

Intangibles: An Overview on Identification, Recognition, Accounting, and Disclosure Rules in the IASB Context

The International Accounting Standards Board (IASB) deals with the problem of recognition of intangible assets in financial statements by focusing on their nature and value. Considering IAS 38, par. 8 (definitions) intangible assets are described as "an identifiable non-monetary asset without physical substance." IAS 38 in par. 17 highlights the importance of the existence of future benefits deriving from intangibles. These benefits, to be defined as an asset, should be measurable in a reliable manner. It could be argued that this definition is not completely appropriate in the case of acquired intangibles since many of them are not easily separable from goodwill in a business combination. Therefore, a broader range of intangible assets is necessary because the principle limits the types of intangible assets that can be recognized, offering an identifiability criterion in the definition. The possibility to have

a "coherent" definition of intangibles will be fundamental in this analysis, which tries to explain the difference between book and market value. A more accurate definition can allow better determination of the separation of recognized or unrecognized intangibles in financial statements, helping to define the amount of firm book value.

The approach applicable in the IAS-IFRS context to distinguish recognized and unrecognized assets is based on the distinction between "internally generated intangible assets" (IGIAs) and "acquired" intangible assets (AIAs) in business combinations. In order to understand the need for proper recognition, IGIAs can be separated into *legally* based and *nonlegally* based. Moreover, in order to provide recognition progressively, IGIAs can be classified, group by group, using the categories of IFRS 3, par. 33. This gradual recognition approach could be more easily achievable than defining changes to actual requirements.

In order to limit the area of the debate on recognition for IGIAs, the following paragraphs, giving the IASB Conceptual Framework for Financial Reporting, are useful:

- Par. OB2, which states: "the objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity";
- Par. OB3, which states: "investors, lenders and other creditors' expectations about returns depend on their assessment of the amount, timing and uncertainty of…the future net cash inflows to the entity";
- Par. QC19—QC 32, which provide the four principal qualitative characteristics that make the information in financial reports useful to users: comparability, verifiability, timeliness, and understandability. Par. 4.40, which identifies as recognition criteria the probability of future economic benefit and par. 4.41, which highlights the importance of the reliability of measurement.

Identification

The debate on the "identification" of intangibles is wide. It should be remembered that the IASB Framework, in par. 49, provides a definition of asset as: "a resource controlled by the enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise." Therefore assets can also be *intangible* since no restrictions are established. Moreover, the definition is consistent with IAS 38, par. 8 (also reported in

IFRS 3, Appendix A), which defines an intangible asset as "an identifiable nonmonetary asset without physical substance."

A definition of an "identifiable" asset can be found in IAS 38, par. 12, which states: an asset is "identifiable" if it is "separable" from an entity and may be "sold, transferred, licensed, rented or exchanged, either individually or together with a related contract" and if it "arises from contractual or other legal rights, regardless of whether those rights are transferable or separable from the entity or from other rights and obligations." IFRS 3, par. IE16-IE44, provides examples of intangible assets—classified under five categories: (i) marketing related intangibles (such as trademarks), (ii) customer related intangibles (such as customer lists), (iii) artistic related intangibles (such as plays, operas and ballets), (iv) contract based intangibles (such as licensing and royalty), (v) technology based intangibles (such as patented technology)—when acquired from business combinations that meet the definition provided in IAS 38. Even when an entity does not intend to use an intangible, but holds it in order to deny other entities access to it, it satisfies the definition of intangible asset.

The IASB provides the definition of "descriptor" to help to identify and circumscribe the item as an intangible. Nevertheless, the question is still open. For some groups of items, such as trademarks related to formulas, recipes, or technological expertise, the situation is clear. In this case, for example, the "brand" can be used as a descriptor to account for investments. Nevertheless, for many items that have to be accounted as intangibles, a solution is still needed. This is the case for IGIAs: the descriptor that can be used to identify them does not distinguish between the "manners in which the asset is acquired" by the entity. Therefore, even if an IGIA was able to satisfy the definition of "asset"—so that the IGIA (i) "is a resource controlled by the entity as a result of a past event" and (ii) "from which future economic benefits are expected to flow to the entities"—IAS 38, par. 63 explicitly denies its recognition affirming that "internally generated brands, mastheads, publishing titles, customer lists and items similar in substance shall not recognized as intangibles assets."

Although the manner in which an intangible is identifiable is not determinant, if it meets the definition of an asset, it is necessary to determine which *event* requires its identification as an asset. In this context, it can be useful to consider the ways in which an asset may arise, distinguishing between:

- *planned* IGIAs, created in the presence of a "discrete plan" defined by the management;
- *unplanned* IGIAs, generated by "continuing business operations."

Adopting a forward-looking approach, the category of intangibles has to be related to a *discrete plan*, allowing recognition of research activity or the development phase of an internal project, even if (i) the nature of the planned IGIAs is broader (ii) these assets can be generated earlier than the "right timing" indicated by IAS 38.[1]

The second category that includes *unplanned* IGIAs is different from the previous one because observable activities that produce the asset are not in accordance with a discrete plan. Therefore, costs arising to "build up" the asset cannot be attributable. This seems to be the reason for which customer lists or internally generated brands cannot be recognized in financial reporting, as previously highlighted.

Recognition

As may be seen easily from previous section, it is possible that some identifiable assets—assets for which it is possible to determine independent future, positive and probable cash flows—cannot be recognized in the financial statements for IAS 38, par. 63 prescriptions. However, the recognition of IGIAs arising from "development" may be admitted "only in certain circumstances." The IASB Framework, par. 4.38, at the same time, prescribes the recognition of a specific item if "it is probable that any future economic benefit associated with the item will flow to [...] the entity" and "the item has a cost or value that can be measured with reliability" The criteria of the "probability of future economic benefit" and of "the reliability of measurement" are described in the following paragraphs of the framework: the first criterion refers to "the degree of uncertainty attaching to the flow of future economic benefits," the second refers to the fact that "the use of reasonable estimates is an essential part of the preparation of financial statements."

When intangibles meet all of the previous highlighted requirements, they may be recognized in financial statements but this then gives rise to the problem of the amount.

IAS 38, par. 21 is consistent with the framework but states that a *cost-based model* must be used ("the cost of the asset can be measured reliably"). This principle is quite different from the measurement principle in IFRS 3, par. 18 that refers to *fair value* for the initial recognition of intangible assets acquired in business combination. Since both approaches (*cost* and *fair value*) can be suitable for the recognition of IGIAs, it is useful to provide a short analysis of these measurement models, both potentially applied for the recognition of IGIAs.

The cost model approach assumes that the recognition of IGIAs is related to "costs attributable initially capitalized to the asset." If the asset

recognition criteria are not met, costs have to be recognized immediately in profit or loss and no asset will be recognized.[2] IAS 38, par. 51 states that in some cases it would not be easy to recognize intangibles, not only because of the identification problem but also because "the cost of generating an intangible internally cannot be distinguished from the cost of maintaining or enhancing the entity's internally generated goodwill or of running day-to-day operations." For this reason "research costs" are generally expensed under IAS 38: their economic outcome is too remote in timing and too difficult to distingue to be recognized in the statements. "Development costs," on the other hand, can be capitalized only under specific conditions listed in IAS 38, par. 57 as: the technical feasibility of completing the intangible, the intention to complete, the ability to use or sell the asset. A rationale for the capitalization of development costs instead of research costs is that the former can be easily associated with a specific project, so that it is an asset whereas the research costs may refer to a wider groups of elements. It seems that there is no technical basis for treating assets arising from research differently from assets arising from development, nor for treating assets arising from research and development differently from other IGIAs for recognition purposes using a cost-based model. Therefore some argue that an appropriate substitute for the restrictive criterion of "able to demonstrate technical and commercial feasibility of completion" in IAS 38 could be changed to a criterion of "the existence of evidence of a discrete plan that is being or has been implemented." In this manner, the recognition criterion would be consistent with the notion of "identifiability" in a cost-based model (Australian Accounting Standards Board, 2008).

While the "cost attributable" is the basic concept in a cost model approach, in a valuation-based approach it is not necessary to determine this value. Therefore, more IGIAs are eligible for recognition with a valuation-based approach. IFRS 3 does not specify the "probable future economic benefits" as initial recognition criterion for intangible assets acquired in a business combination since they are measured at fair value. IFRS 3, BC 130, explains that the fair value of an intangible asset reflects expectations about the probability that future economic benefits associated will flow to the entity. This can be applicable to IGIAs only if they are measured at fair value.

The technique indicated as "hypothetical business combinations" to recognize IGIAs using a valuation-based approach can be criticized. A more pragmatic approach distinguishes between two different models to recognize IGIAs: the first model recognizes IGIAs "when there is an indicator as a proof those intangibles exists"; the second model recognizes intangibles "when it is indicated in a discrete plan."

In the first model, possible indicators include:

(i). documented discrete plan to create a specific intangible asset;
(ii). a documented strategy to manage an asset, identified by management and worthy of attention;
(iii). an external source as an offer from a third party to acquire an IGIA not previously identified by management.

The advantage of this model is that it is less costly than a technique based on the hypothetical business combination technique. Disadvantages are related to the fact that there is the risk of nonrecognition of certain IGIAs that satisfy the framework and the IFRS 3 asset recognition criteria but do not have a specific discrete plan. In the absence of an external indicator, recognition may depend on what management wants to do, resulting in loss of comparability between different entities.

In the second model, recognition can take place when IGIAs are in the process of being developed or have arisen from the completion or abandonment of a discrete plan. The main advantage of this technique is that it is less costly than the model requiring indicators as proof of the existence of IGIAs and it also allows recognition of the same IGIAs that can be recognized with a cost-based approach. However, the main disadvantage is that this technique does not allow recognition of unplanned IGIAs.

Another important element that should be mentioned is the measurement of intangibles in subsequent years. The dualism of evaluation models remains because, as stated in IAS 38, par. 72, an entity shall choose "either the cost model…or the revaluation model" but "if an intangible asset is accounted for using the revaluation model, all the other assets in its class shall also be accounted for using the same model, unless there is no active market for those assets." However, important limits exist in the application of the fair value model for subsequent recognition of intangibles. The first is that fair value "shall be determined by reference to an active market" (IAS 38, par. 75). Other limits are that for some assets IAS 38 presumes that no active market exists (for instance, for brands) so it is impossible to apply the revaluation model.

Referring to the recognition of goodwill, which expresses the company's ability to generate income through their intangible assets not recognized in financial statements (such as clients list, firm image, human resources, etc.), the IASB states that it has to be treated *separately* from other intangibles because of some specific peculiarities that have to be reflected in accounting. From a theoretical point of view two types of goodwill contribute to the

firm's value: "internally generated" goodwill and the goodwill "paid for the acquisition" of a company or a branch.

However, according to the IASB, the goodwill, represented by the economic benefits that cannot be individually identified or measured separately, cannot be recognized in the annual report if it is internally generated. It can be recognized only as the excess of the price paid for the acquisition of businesses over "the net of the acquisition-date amounts of the identifiable assets acquired and the liabilities assumed" measured in accordance with IFRS 3 (IFRS 3, par. 32). So for the initial recognition, it is possible to separate some specific intangible assets from goodwill and proceed separately at their amortization and future evaluation. Of course, intangible assets may be recognized separately only if they have the above requirements of IAS 38.

After the initial recognition and goodwill—and the assets indistinctly included in it—it will not be amortized but will be subject annually to the impairment test, as indicated in IAS 36, so the recoverable amount may be evaluated as the maximum of fair value and value in use. IAS 36 specifies that when the recoverable amount is determined as a fair value, the hierarchy of valuation solutions to be followed is:

- the price "in a binding sale agreement in an arm's length transaction," adjusted for incremental costs directly attributable (IAS 36, par. 25);
- the asset's market price less the cost of disposal, if an active market exists (IAS 36 par. 26);
- the amount possible to obtain from a disposal of the asset "in an arm's length transaction between knowledgeable, willing parties, after deducting the cost of disposal" determined referring to the best information available (e.g., transactions for similar assets within the same sector they belong to). (IAS 27, par. 27)

In the goodwill evaluation it is possible to use methods based on a market or an income approach. When the recoverable amount is determined as "value in use," its determination requires the estimate of future cash flows, related to goodwill or to a cash generating unit (CGU), discounted at a coherent rate. The accounting standard does not provide guidance on technical methods by which the calculation is made but merely indicates the general principles. The ratings must in fact be based on reasonable and supportable assumptions "that can represent the best estimate made by the management of a range of economic conditions that will exist over the remaining useful life of an asset" (IAS 36). The accounting standard does not provide guidance on technical methods by which the calculation is

classified as held for sale according to IFRS 5 should have separate indications.

IAS 38, par. 119 defines the criteria that may be used in grouping the assets in separate categories: more details have to be presented if they are relevant.

In accordance with IAS 38, par. 122, an entity should also present in the notes:

- for each intangible asset with an "indefinite life," its amount, and the reasons for which it is believed that such assets could have an unlimited life;
- for each intangible asset that can be considered "relevant," the book value, and the remaining amortization period;
- for each intangible "acquired at fair value," the initial fair value, the carrying value, the valuation model applied to evaluate the asset in financial statements (cost or fair value);
- any restrictions or guarantees existing with respect to intangibles;
- any contractual commitments for the purchase of other intangibles fixed by the company.

A specific paragraph of IAS 38 (124) defines other disclosure requirements for the case of intangibles recognized applying the revaluation model: the date of revaluation, the carrying amount of revalued assets, the difference existing with the cost evaluation; the surplus deriving from the revaluation, the methods and the most relevant assumptions applied.

With regard to the "disclosure on goodwill," apart from the previous disclosure requirements referring to par. 118 and 120 of IAS 38, IFRS 3, par. B67, letter d), requires reconciliation between this amount at the beginning and at the end of the year, and attention to:

- gross impairment losses accumulated at the beginning and at the end of the period;
- any additional amounts of goodwill that has been recognized during the year;
- impairment losses recognized during the period derived from the IAS 36 application (including the recoverable amount);
- net exchange rate differences emerging from the IAS 21 application;
- other changes in the carrying amount during the period.

Obviously, other important information on goodwill should be presented following IAS 36, par. 80–99; the theme both of allocating goodwill to cash

made but merely indicates the general principles. The evaluations must be based on reasonable and supportable assumptions "that can represent the best estimate made by the management of a range of economic conditions that will exist over the remaining useful life of an asset" (IAS 36).

Disclosure Requirements for Intangible Elements in the Notes

The initial book value of a single intangible asset in IAS 38 varies depending on the means through which such an activity enters the company (separate acquisition, business combination, exchange of assets, production). In the case of internal production, IAS 38 explicitly states—as more broadly described in the previous paragraph—that certain expenses cannot be the subject of capitalization, including the amounts paid for theoretical research, advertising expenses, and the costs for staff training. The intangibles recognized in financial statements contribute to determine the economic results and the company book value, but the market value is evaluated considering both financial statement information and the impact of intangibles not recognized in the accounts.

Hence, to understand the gap between market value and book value it may be useful to analyze qualitative and quantitative information about intangibles written in the notes and in the sustainability reports.

The information referring to intangibles that must be provided in the notes to financial statements are described in IAS 38, par. 118–128. In particular, par. 118 states that the company, for each homogeneous category of intangible assets, should disclose:

- the definite or indefinite life assets and, in the latter case, the coefficient and the type of depreciation applied;
- the initial value of the homogeneous group of assets and the total amount of depreciation and impairment adopted;
- the methods adopted for amortization;
- the line of the income statement in which any impairment amounts are included;
- the reconciliation between the carrying amount of intangible assets at the beginning and at the end of the year (with a separate indication of those produced internally, of those acquired separately, and of those acquired through business combinations), together with the amounts of any revaluation for the application of fair value; and the value of any impairment losses done (also indicated in other comprehensive income); the amortizations applied in the period; the effect of currency when a translation from a foreign currency exists. The assets

generating units and of testing the value of CGUs are examined. In particular, IAS 36, par. 135, requires:

- the aggregate carrying amount of goodwill and intangibles allocated to different units;
- a description of keys assumptions;[3]
- the management approach used to determine the values of key assumptions, and the origin of them (past experience, external sources, the difference of the assumptions adopted from past experience and from external sources);
- the possible changes in the assumptions and the effects on recoverable amount.

For the paper scope, it is important to notice that IAS 38, par. 128 (b) states that IASB encourages "but not requires, a brief description of significant intangibles controlled by the entity but not recognized as assets because they don't meet the recognition criteria." This is an important point because it represents both the admission by IASB of the existence of intangible assets important from the stakeholder's view that are not actually recognized in financial statements (ad human resources, client relationship, etc.) and, at the same time, the absence of mandatory information for these assets. This position presses researchers to find a solution that permit to explain the difference between the "value" of an entity on the market and the book value. The model presented in the following sections tries to find a way to analyze the factor behind this difference.

All of these details on intangibles are considered in the determination of the KPI indicators described in the following section and are used in the ratio for intangibles of the mathematical model proposed.

Sustainability and social statements as Disclosure of Unrecognized Intangibles from a Multistakeholder Approach Perspective

Because not all the details needed by investors related to intangibles is presented in financial statements, alternative approaches for the knowledge of the impact of intangibles on firm performance have been developed. For example, a multistakeholder approach summarizes different perspectives in analyzing firm performance:

- economic and business approach, aimed essentially to define the requirements that identify an intangible asset and allow its measurement and recognition;

- financial approach whose purpose is to see how the existence of certain assets, regardless of whether or not they are recognized, impacts the image and the value of the company;
- financial approach that tries to determine the best technical solutions that enable investors to understand the value of a certain immateriality and how its presence or absence changes the company's market value;
- social responsibility and environmental responsibility approach, based on qualitative and quantitative indicators to provide stakeholders with nontraditional information but which allow them to form a more complete judgment on the company as a whole;
- legal approach, aimed at establishing the conditions for the existence and ownership of an intangible asset and the conditions for its eventual transfer.

Literature underlines the necessity to adopt a multistakeholder approach in analyzing firm performance. Hillman and Keim (2001) tested the relationship between shareholder value, stakeholder management, and social issue participation. First, they found evidence that stakeholder management leads to improved shareholder value, while social issue participation is negatively associated with shareholder value. Moreover, they provide evidence that building better relations with primary stakeholders—like employees, customers, suppliers, and communities—could lead to increased shareholder wealth by helping firms develop intangibles as valuable assets, which can be sources of competitive advantage.

A significant part of the literature has recently provided evidence that companies have to focus their attention on intangible assets and their interrelations as they can be considered key assets for lasting and stable success (Lev and Sougiannis, 1996; Brynjolfsson and Shinkyu, 1999; Carmona, Momparler and Gieure, 2012; Brown and Kimbrough, 2011; Jhunjhunwala, 2009; Moeller, 2009; Boujelbene, 2008; Steenkamp and Kashyap, 2010; Chander and Mehra, 2011).

In the light of the evidence provided by literature, different studies and approaches have tried to define a standard of measurement and evaluate social responsibility. The most important are summarized in Table 6.1.

A MultiStakeholder Approach for the Evaluation of Intangibles

Hillman and Keim (2001) stated that building better relations with primary stakeholders—like employees, customers, suppliers, and communities—could lead to increased shareholder wealth by helping firms develop intangibles as valuable assets that can be sources of competitive advantage.

Table 6.1 Social statement standardization efforts: key organizations and documents

Organization	*Document*	*Year of release*
CEPAA (Council for Economic Priorities Accreditation Agency), Accreditation Company for Ethical Certification.	SA8000, Standard provided by CEPAA. It covers 7 accounting areas: child labor, health and security labor, freedom of association and union representation, discrimination (sexual or racial), disciplinary practices (psychological and corporal punishment, insults), labor timetable (forced overwork, maximum week hours, festive labor), minimum salary	1997
ISEA (Institute of Social and Ethical Accountability) is an international professional association founded in 1996 involved in developing a social responsibility culture and company and non-profit organization ethical behavior.	*The Copenhagen Charter*, a management guide to stakeholders reporting. The document follows the 3rd International Conference in "Social and Ethical accounting, auditing and reporting"	November, 1999
CSR Europe	Voluntary Guidelines for Action on CSR Communication and Reporting	2000
G.B.S., an Italian Study Group aiming at defining Social Reports guidelines, it has been created in 1998 through the cooperation of a group of Italian Universities, SEAN-KPMG and SMAER.	Social Reporting Guidelines – GBS standard	May, 2001
SEAN/KPMG, Standard sector formulation for credit companies	Social Reporting Guidelines for the credit sector, ABI/IBS Model	May, 2001
Q-RES Group (September 1999) Worktable created by CELE (Centre for Ethics, Law & Economics) to assess a company management model.	Q-RES Project: The quality of Ethical??? Social company responsibility. Guidelines for management	October 2001

Continued

Table 6.1 Continued

Organization	*Document*	*Year of release*
Italian Labor and Social Politics Ministry/Bocconi University, Milan: creation of a working Group to form a standard of social performance indicators.	CSR-SC Document	2003
GRI (Global Reporting Initiative), started in 1997, is an initiative promoted by CERES (Coalition for Environmentally Responsible Economies) in partnership with UNEP (United Nations Environment Programme).	*Sustainability Reporting Guidelines on Economic, Environmental and Social Performance* – GRI, version 3.1	2011

A multistakeholder approach is justified by the necessity to establish the value of intangibles considering the perspective of every stakeholder since each of them asks to be informed about activities in order to actively participate in the value-creation process.

The communication of information related to business, firm behaviors, and values adopted facilitates the process of building market consensus in firm value creation. The multistakeholder approach emphasizes the importance of information flow to stakeholders, who are both a source of information and recipients of communication.

These reasons underline the importance of establishing specific reporting that allows different classes of stakeholders to be informed on company profiles not reported in financial statements. The main project that plays a leading role on this issue is the Global Reporting Initiative (GRI). It promotes the use of sustainability reporting as a way for organizations to convey disclosures on their environmental, social, and economic impact.

With regard to the "Overview of sustainability reporting," Sustainability Reporting Guidelines, Vers. 3.1, p. 3 state that principles included in the GRI are "intended to serve as a generally accepted framework for reporting on an organization's economic, environmental, and social performance. It is designed for use by organizations of any size, sector, or location. It takes into account the practical considerations faced by a diverse range of organizations—from small enterprises to those with extensive and geographically dispersed operations."

The GRI defines some useful guidelines in different documents:

- *Sustainability Reporting Guidelines*, containing criteria to define the content of the report. They should ensure a high quality of the information reported in social statements;
- *Disclosure Standards,* identifying the most relevant and significant information to disclose from a mulstistakeholder perspective. Three main standards are considered in the disclosure:
  - *Strategy and Profile,* including information on strategy, company profiles, and governance;
  - *Management Approach*, reporting details on operating choices of the entities and main value drivers to explain annual performance;
  - *Performance Indicators,* the set of measures adopted that permit evaluation of performance considering economic, social, and environmental perspectives.
- GRI *Sector Supplements* are technical documents for specific sectors in which firms operate. The purpose is to disclose aspects that are not included in the basic indicators through the use of sustainability indicators.

The decision to develop these supplements was based on three main needs:

- to disclose on specific characteristics of the sector;
- to implement disclosure on the sustainability performance of firms;
- to increase the quality of social responsibility reports in specific sectors.

The GRI papers are periodically reviewed. The aim of the last update of these Guidelines (G 3.1) is to help organizations in preparing sustainability reports, focusing on the key aspects that affect business and offering a standard for sustainability reporting practice.

The guidelines have been developed worldwide by report users and professional intermediaries with the objective of making G 3.1 universally applicable to all organizations. In terms of ways to represent sustainability disclosures, the GRI provides guidance considering different report formats such as stand-alone sustainability reports, integrated reports, annual reports, reports that address particular international norms, or online reporting.

GRI guidelines permit identification of the main KPIs and through them the system of interrelations inside companies between human capital, equity, and organization. These KPIs constitute an important starting point for the technical model proposed in the following sections.

The Use of KPIs to Improve Disclosure on Unrecognized Intangibles

KPIs, derived from the application of a multistakeholder approach, provide organizations with a way to measure progress toward organizational goals. KPIs should reflect the organization's goals and should be a key to quantify and measure its success. KPIs are usually used in a long-term perspective so that the definition of firm-specific KPIs and how they have to be adopted do not change frequently.

Adopting a multistakeholder approach, through the use of KPIs, it is possible to assess the information regarding unrecognized intangibles; in other words, to measure the quantity and the degree of quality of external information and how and by how much it has improved over the years:

- quantitative information in terms of numbers, percentages, ratios, financial and economic data, providing a numerical measure of the magnitude of phenomena and enabling reliable comparisons over time;
- qualitative information explaining business phenomena, motivating changes in economic and financial indicators, explaining initiatives, projects, and policies.

The KPIs used in our analysis are divided into several categories, based on different stakeholders such as customer, environment, community. Among these KPIs, there are some related to company labor policies (e.g., turnover), to procedures related to training and raising awareness (e.g., average hours of training per year per employee), to mechanisms designed to survey the degree of satisfaction. The KPIs are summarized in Table 6.2.

Through the use of KPIs it is possible to include the impact of unrecognized intangibles in the evaluation of stakeholders and to analyze some important changes in human capital value and policy.

The benefit of using KPIs is confirmed by recent literature. Arvidsson (2011) affirms an increasing focus on nonfinancial information related to intangible assets in corporate disclosure. It seems that managements have acknowledged the importance not only of describing the less tangible values for their own purposes, but also of explaining the roles they play in the value-creation process and in corporate strategy. The study reveals a trend shift from research and development and relational information toward Corporate Social Responsibility (CSR) and employee-related information and underlines the positive impact of the use of nonfinancial KPIs. Overall, the results indicate that voluntary disclosure compensates for the deficiencies of financial statements to properly disclose intangible assets.

Table 6.2 Key performance indicators

Stakeholders	*KPIs*
Human Resources	Composition of workforce per age group
	Composition of workforce per qualification
	Employment policies
	Employee compensation
	Ratio of basic salary of men to women by employee category
	Average hours of training per year per employee by employee category
	Internal research related to employees satisfaction
Corporate Governance	Governance model
	Possible executive role of the Chair of the highest governance body
	Number of members of the highest governance body that are independent and/or non-executive members
	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body
	Processes in place for the highest governance body to ensure conflicts of interest are avoided
	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation
Financial Community	Equity composition
	Numer of shareholders per type of shares
	Composition of share ownership per category
	Profit (loss) per share
	Dividends
	Share price
	Rating
	Shareholders participation in government and protection of minorities
	Presence of minority shareholders in the board of directors
	Information on the activity of investor relation

Continued

Table 6.2 Continued

Stakeholders	*KPIs*
Customers	Customers per geographic area
	Customers per category
	Customers per type of offer
	Initiatives of customers satisfaction
	Initiatives of customers loyalty
	Ethics services
	Privacy policy
	Initiatives to improve access to financial services for disadvantaged people
	Initiatives to improve financial literacy
State and Local Community	Magnitude of taxes and duties and breakdown by type
	Relationship with local community
	Percentage and total number of business units analyzed for risks related to corruption
	Internal auditing
	Compliance audits and inspections
	Monetary value of significant fines and total number of non monetary sanctions for non compliance with laws and regulations
Community	Education and training
	Culture
	Social solidarity
	Stakeholder engagement
	Relationship with media
Environment	Percentage of materials used that are recycled input materials
	Direct energy consumption by primary energy source
	Total water withdrawal by source
	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside and areas of high biodiversity value outside protected areas
	Total direct and indirect greenhouse gas emissions by weight
	Total weight of waste by type and disposal method
	Monetary value of significant fines and total number of nonmonetary sanctions for non compliance with environmental laws and regulations

Sriram (2008) found that evaluating firms using information about their significant intangible assets improves the evaluation of their financial health. However, fundamental financial variables continue to be important in signaling financial health, regardless of asset composition.

Integrated Reporting as a Possible Solution to the Failure of Current Accounting Requirements

In the past few years, debate about the role and importance of integrated reporting has increased, and this has been justified by research on the association between different firms' profiles subject to disclosure, the quality of their external disclosure, and their impact on market valuation. Vuolle et al. (2009), considering the funding organization's point of view, found that the assessment of intangible aspects related to research and development (R&D) projects can be considered a key aspect to disclose. Nevertheless, the author concludes that current measurement practices are still inadequate; Dammak et al. (2008) show that size, intangible contributions in the balance sheet, indebtedness, performance, multinationality, and sector type appear to influence intellectual capital disclosure in a significant manner; Oliveira et al. (2010) found that specific disclosure on these topics is related to listed companies and is more likely in *Sustainability Reports* of firms that have a higher level of application of the Global Reporting Initiative Framework.

On the relationship between specific factors and the quality of disclosure on intangible assets, Axtle-Ortiz (2013) provides evidence that factors such as geographical region, industry sector, and organization size can be considered statistically significant in terms of influence on the weighting of intangible assets; from a "market valuation" perspective, Elbannan (2013) suggests that analyst coverage is significantly associated with firm R&D, industry advertising expenses, firm size, and trading volume, and analyst effort is a function of firm and industry-level R&D expenses and firm size.

Focusing on the accounting standard adopted, Kang and Gray (2011) underline that the variety, nature, and extent of intangible asset voluntary disclosure differs according to industry, not according to size or country. They also found that the vast majority of companies engage in voluntary intangible asset disclosure practices and disclose both financial and non-financial "quantitative" information, rather than "qualitative" data. Sahut et al. (2011) suggest that the book value of other intangible assets of European listed firms is higher under IFRS than under local GAAP and has more informative value to explain the price of the share and stock market returns. Chalmers et al. (2012), investigating a subsample of firms that report lower intangibles under IFRS than under the prior Australian GAAP, found some

evidence consistent with a loss of useful information related to intangibles. In the case of extraordinary operations, James et al. (2008) show that, reducing the variety of accounting policy options available to bidder management after an acquisition, a systematic reduction in the strength of the association between premium and goodwill happens.

This literature sample provides evidence on the need to have integrated reporting that is able to inform on different profiles and to underline specific factors characterizing specific firms' business and results.

The discussion paper on Integrated Reporting, issued on September 12, 2011, by the International Integrated Reporting Council, has constituted an important basis for discussion. The main advantages of this approach are well described in the paper that affirms research has shown that reporting influences behavior. Integrated Reporting shows a broader explanation of performance than traditional reporting. It makes visible an organization's use of and dependence on different resources and relationships or "capitals" (financial, manufactured, human, intellectual, natural, and social), and the organization's access to and impact on them. Reporting this information is critical to:

- a meaningful assessment of the long-term viability of the organization's business model and strategy;
- meeting the information needs of investors and other stakeholders; and
- ultimately, the effective allocation of scarce resources. (International Integrated Reporting Council, 2011)

The importance of integrated reporting for the disclosure of intangible assets has been recently confirmed. Jhunjhunwala (2009) underlines that the success of any organization depends on a "network of interrelated intangible assets" that affect one another and it is essential to ensure that each of these performs as desired. Nevertheless, according to Brown and Kimbrough (2011), even if they confirm that intangible investments allow firms to differentiate themselves economically from their rivals, they provide important evidence. Earnings are positively associated with intangible asset intensity, but these intangibles have to be "separable" and "identifiable": separable recognized intangibles contribute more to earnings' noncommonality, and this evidence can be attributed to the fact that separable recognized intangibles are more likely to arise from contractual or legal rights and, thus, are less susceptible to expropriation by rival firms.

In this context, the integrated report gains interest if it is able to provide identification of any intangible asset that is economically valuable and

susceptible to be defended. Recently, a new model has been provided to answer the need for integrated disclosure. Veltri and Nardo (2013) try to build a model of disclosure, useful for internal and external purposes, to integrate the "social" and "intangible" dimensions in a single document: the Intangible Global Report. Starting from the Corporate Social Responsibility (CSR) and International Corporate Responsibility (ICR) Frameworks, the authors planned and designed a model for corporate communication. The model is made up of five dimensions, three derived from Intellectual Capital Reporting (human capital, structural capital, and relational capital) and two from the Global Reporting Initiative Report (environmental and social). The different aspects of each dimension are surveyed in terms of intangible resources, activities, and impacts measured by financial and nonfinancial indicators.

The Evaluation of Intangible Assets for Accounting Purposes: New Ideas for a Mathematical Model?

Financial statements in the IASB model do not guarantee sufficient knowledge for investors of the impact of some intangible assets on performance (especially assets that are difficult to "identify" and to control in the IAS 38 sense). Other information may be obtained from voluntary disclosure or sustainability reports. These two factors indicate the necessity to build a model in which firm market value is joined both to book value and to another index that represents unrecognized intangibles.

The proposed model, which for certain aspects is connected with the Daniel and Titman valuation, starts from Kalecki's assumptions on the relationship between book value and market value.

When the book value to market price ratio is >1, the company is less exposed to takeover and to the possibility of top managers losing control than when this ratio is less than 1. It is evident that to buy shares on the market is less expensive than to buy company assets according to accounting data that is evaluated at a higher value. Of course, this analysis disregards the fact that, as a result of increased demand for stocks, the share price would rise. However, the maintenance of a situation in which the relationship between book value and market value is > 1 must be analyzed to understand what the causes of this mismatch are, to identify which elements influence the expectations of the market, and to realize how unrecognized intangibles may play an important role. The analysis is performed by tying the annual yield of each company to two components. The first is identified by information about tangible assets (including recognized intangibles) derived from financial statement data that should summarize past

performance and growth prospects, while the second is derived from information on unrecognized intangibles or on the related reactions of investors to the realization of unpredictable events in the current year that influence the development of share prices.

The model will refer to a year in which, at time t-1, the yield at time t is not known and is a random variable that will be denoted by r (Pucci, Cenci, Luly, 2013). Using the described decomposition, it is possible to define the following equation:

$$\tilde{r}(t-1,t) = E_{t-1}\left[\tilde{r}(t-1,t)\right] + \tilde{r}^{T}(t-1,t) + \tilde{r}^{I}(t-1,t) \tag{1}$$

Where:

$E_{t-1}\left[\tilde{r}(t-1,t)\right]$ represents the expected return on the period $(t-1,t)$;
$\tilde{r}^{T}(t-1,t)$ is the random variable, representing the return due to "tangible" elements (including all the assets recognized in financial statements);
$\tilde{r}^{I}(t-1,t)$ is the random variable, representing the return due to "intangible" elements.

In accordance with Daniel and Titman (2006), it is assumed that the logarithm of the book value to market value ratio at time t is a proxy for the return on time; this proxy follows a Markov stochastic process. This means that, at time t, all the information about the past evolution will be contained in the information known at time t-1, which immediately precedes it.

Indicating with:

B_t = the book value at time t,
M_t = the market price at time t,

the following equation may be obtained:

$$\log\left(\frac{B_t}{M_t}\right) = \log\left(\frac{B_{t-1}}{M_{t-1}}\right) + \log\left(\frac{B_t}{B_{t-1}}\right) - \log\left(\frac{M_t}{M_{t-1}}\right) \tag{2}$$

where:

$\log\left(\frac{B_{t-1}}{M_{t-1}}\right)$, known at t-1 time, is a proxy of the expected return on $(t-1,t)$

$\log\left(\frac{B_t}{B_{t-1}}\right)$ is a proxy of the book value return on $(t-1,t)$

$\log\left(\frac{M_t}{M_{t-1}}\right)$ is a proxy of the expected return linked to intangible information.

The proposed model is based on the logarithm of the inversion of the valuation ratio as the sum of three different components, each of them with a precise financial meaning.

To improve the model, some adjustments have been made, for example, an adjustment for the dividends distributed in the period analyzed. Considering this adjustment, the final equation may be written as:

$$bm_t = bm_{t-1} + r_b(t-1,t) - r_i(t-1,t) \tag{3}$$

where:

$$\log\left(\frac{B_t}{M_t}\right) = bm_t$$

$$\log\left(\frac{B_t + D_t \cdot N_t}{B_{t-1}}\right) = r_b(t-1,t)$$

$$\log\left(\frac{M_t}{M_{t-1}}\right) = r_i(t-1,t)$$

To verify its utility, this formula has been applied to a sample of listed banks. The data, used to verify the effectiveness of the models is—in the first stage—taken only from the Italian bank sector. In particular, the data has been taken from the 17 financial statements of the listed Italian banks that, as known, use IFRS to evaluate their annual results.

To define the index for information about unrecognized intangibles, all the details presented in financial statements referring to intangibles was used. At the same time, where available, the Sustainability Report was analyzed and relevant data was used to improve the level of information included in the index for intangibles. This index was determined using KPI scores (described in GRI papers) related to the most relevant stakeholders. Positive as well as negative KPI values were all included in the index (Pucci, 2013). To obtain the book value and the market value both Mediobanca data and historical amounts derived from the market and from financial statements were used.

First of all, for each bank of the sample, the correlation between the information related to unrecognized intangible assets in financial statements

and the proxy performance information associated with intangibles was determined. The analysis was performed assuming as indicators the level of the information regarding the unrecognized intangible assets, for each bank, the sum of the values assigned to the detailed, and general information contained in the banks' balance sheets for the years 2008, 2009, and 2010. Results were determined applying the multistakeholder analysis and the impact that this data will have on the market in the following year. For each bank of the sample, the correlation between the information related to intangible assets not accounted for and the proxy performance information associated with intangibles was determined.

The results of the correlation are summarized in Table 6.3.

The results of the correlation show that, except for the banks for which this index is equal to zero, the ratio for unrecognized intangibles was maintained generally constant in the period considered, and the correlation between the two variables is always negative. From this information, it may be concluded that increases in information in financial statements related to unrecognized

Table 6.3 The results of the comparison between the intangibles ratio and the income relating to these assets

	Intangibles ratio			*Intangibles income proxy*		
	2008	*2009*	*2010*	*2009*	*2010*	*2011*
B.1	20	18	20	−0.07057	−0.00675	−0.28461
B.2	57	57	57	0.062622	−0.42265	0.129938
B.3	26	28	29	0.323513	−0.06007	−0.23045
B.4	53	53	53	0.12118	−0.1302	−0.01578
B.5	22	22	22	0.374186	−0.13375	−0.49794
B.6	53	53	53	−0.0045	−0.33323	−0.28145
B.7	52	52	52	−0.07444	−0.38142	−0.4594
B.8	49	49	49	0.006844	−0.25303	−1.00403
B.9	17	17	17	0.186362	−0.15916	−0.52982
B.10	63	63	63	0.216206	−0.40211	−0.09268
B.11	27	29	29	0.190677	−0.1987	−0.37071
B.12	51	51	51	−0.2037	−0.36673	−0.46813
B.13	57	57	57	0.196506	−0.61333	1.083433
B.14	29	29	33	0.086578	−0.09717	−0.23387
B.15	28	28	28	0.096321	−0.10647	0.045173
B.16	58	58	58	0.021878	−0.38793	−0.28914
B.17	51	51	51	0.689264	−0.21096	−3.16337
					Correlation index	
				−0.13835	−0.79664	0.028913

intangibles could have a positive impact on the market because they determine the sensation of more security regarding the entities.

The limits of the model and of the practical application, which could be removed with a further level of analysis, may be summarized as follows:

- the lack of an analysis of the link and the possible interrelations between the existing information on intangibles recorded and unrecorded and the contents of the notes of banks in terms of risks and their management;
- the absence of a specific analysis of the existence and the effects of any impairment operated by companies during the reporting period;
- the number of firms analyzed and the limitation of the sector;
- a separate analysis of the sustainability report in the evaluation (until which point this document is fundamental to understand the difference between book and market value).

Conclusions

From the evidence provided in the previous paragraphs, it can be concluded that intangible accounting, although already regulated, is an "under construction site" issue. An important starting point, in the reevaluation of disclosure principles, should be IAS 1, par. 13 and 14.

In particular, par. 13 states that companies are advised to prepare a report, in addition to the annual accounts, in which management describes and analyzes the main elements that contribute to their performance and to their financial situation as well as the risk factors that affect the business. This report should include:

- the description of the main factors that contribute to the company's results, such as changes in the environmental context, corporate strategies and the policies made in response to changes, the strategies put in place in order to stabilize and possibly improve business results, including the dividend policy;
- the sources of financing instruments and the level of leverage placed as a limit and target of funding policies;
- the list and the "value" of the resources that, even though they play a fundamental role to achieve performance and business results, are not accounted for in financial statements as a result of the application of the principles established by accounting best practice.
- IAS 38, par. 14, however, explains that all the reports and notes submitted by companies in addition to financial statements as defined by

> accounting principles—such as budgets or environmental value added statements—are considered to be beyond the conceptual scope and application of the International Accounting Standards and, therefore, not bound by them.

From the analysis of par. 13 and 14 and of the recent proposal of IASB referring to integrated reporting, the following conclusions emerge. First of all, the opening of the IASB to different future financial statements in the determination of corporate performance and in the presentation of corporate financing strategies and investment will highlight the successful and unsuccessful intangible factors, even if, at present, they are not included in financial statements and are not recognized under current principles.

Second, the theme of the report of the directors, the accompanying paper to the annual accounts, has been the subject of attention of the IASB. On December 8, 2010, the IASB issued a Practice Statement on Management Commentary, which is not mandatory, in order to obtain two different goals at the same time:

- to supply administrators with advice to explain their goals and strategies;
- to provide users with a useful tool to understand company risks and future prospects, allowing better dialogue between companies and the capital market.

In this light the definition and the recognition in financial statements of IGIAs obviously have great importance.

In order to identify these assets, planned or unplanned, that meet requirements defined in IAS 38/IFRS 3, a top-down approach based on the concept of "hypothetical" business combination has been set up, assuming the entities to be acquired at the reporting date (since IFRS 3 recognizes intangibles acquired through business combinations). Nevertheless, potential problems can arise considering specific circumstances in each business combination (i.e., "friendly" versus "hostile" business combinations can produce different values for intangible assets, especially those internally generated). The technique is similar to step two of the "two-step approach" adopted for the impairment test of goodwill proposed in the IASB Business Combinations project (ED3 Business Combinations, 2002; Exposure Draft of Proposed Amendments to IAS 36 Impairment of assets; IAS 38 Intangible Assets) that involves the determination of the implied value of goodwill using a hypothetical business combination approach (although at the end of the examination, IASB rejected this approach for "goodwill" for a number of

reasons). Some posit that even if the application of the technique is difficult and costly the first time it is adopted, it will probably provide useful information for management; moreover, once the technique is applied, the ongoing costs and efforts will be significantly less than the initial costs and efforts (Australian Accounting Standards Board 2008).

Regarding the evaluation models, the relationship between book value and market value of companies is significantly influenced by their intangibles and it could be important to have more evidence of these effects, especially intangibles not recognized in financial statements. From this point of view, both integrated reporting and the variation of existing accounting requirements for IGIAs could play a relevant role.

Notes

1. The current problem is related to three topics and the following questions 1. Even if plans change, can assets continue to exist?; 2. Does an interim asset exist?; 3. Even if plans change, do assets continue to exist?
2. According to the document prepared by the Australian Accounting Standards Board, and considering the Framework approach using a cost-based model, the recognition of capitalized costs associated with IGIAs is justified "only if future economic benefits are probable." This means also that future economic benefits can be related to "in-process" and even to "unsuccessfully" implemented plans since "probable future economic benefits" does not necessarily mean "probable positive net future economic benefits," Australian Accounting Standards Board (2008).
3. IAS 36, par. 134, identifies some of keys assumptions as: the period of cash flows projection, the growth rate used to determine cash flows, the discount rate et cetera.

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CHAPTER 7

A Comparative Analysis of Human Capital Disclosure in Annual Reports and Sustainability Reports

Emilio Passetti and Lino Cinquini

Introduction

In the past 20 years, accounting literature has been increasingly attentive toward company practices regarding voluntary intellectual capital disclosure (Guthrie, Ricceri, & Dumay, 2012; Wyatt, 2005). Among the three categories comprising intellectual capital, the most fully reported is relational capital, followed by organizational capital and human capital. Human capital is usually the last category reported, although it has been recognized as an important factor in reducing investment risks (Wyatt & Frick, 2010) as well as developing and maintaining good relationship between companies and employees (Beattie & Thomson, 2010). Companies typically use a combination of public and private channels to disclose intellectual capital information, such as annual reports, Initial Public Offering (IPO) prospectuses, company websites, interim accounts, company announcements, and presentations to financial analysts (McInnes, Beattie, & Pierpoint, 2007).

According to Lev and Zambon (2003), public documents that could be used to widely disclose human capital are sustainability reports. Sustainability reports show a company's commitment to the social and environmental impact of its activities. Compared to other documents, these reports are underinvestigated in intellectual capital literature (Cinquini, Passetti, Tenucci, & Frey, 2012). In this regard, previous studies have shown

mixed results about sustainability reports' capacity to disclose human capital information (Pedrini, 2007; Striukova, Unerman, & Guthrie, 2008). Yet, annual reports are still considered important public documents to communicate voluntary information even if they usually offer only a basic set of human capital data (Beattie & Thomson, 2010).

Parker (2007) and Beattie and Thomson (2010) argue that despite extensive research, the investigation of voluntary intellectual capital disclosure and its categories is still a main topic in the external research agenda and that its understanding is a key aspect in the accounting profession's future. To extend this kind of analysis, more comparative studies confronting different types of documents should be undertaken to assess and verify their similarities, differences, and links (Striukova et al., 2008). In conjunction with this discussion, this research aims to compare the extent and quality of human capital disclosure between a sample of 52 annual reports and a sample of 52 sustainability reports published by listed Italian companies. The main purpose is to contribute to the debate concerning the supply of human capital information through different public channels in light of the importance of human capital for the external evaluation of a company and its legitimation. The chapter also provides some speculation regarding the typology and quality of human capital information disclosed by sustainability reports and human capital information used by financial market agents in order to verify the presence of a hypothetical coherence between the two classes of information.

The chapter is structured as follows. Section 1 provides an overview of what human capital is and why companies decide to (un)disclose it. Section 2 reviews the literature on external human capital reporting. Sections 3 and 4 describe the research methodology used and the content analysis findings. Section 5 discusses and analyzes the findings. Section 6 summarizes the research and its limitations; also, research areas for future development are indicated.

Human Capital and Signaling Theory

Human capital is considered one of the most important intangible assets; it includes the knowledge, professional skills, experience, and innovativeness of managers and employees within an organization. The Organisation for Economic Co-operation and Development (OECD) (2001) defines human capital as the knowledge, skills, competencies, and attributes embodied in individuals that facilitate the creation of personal, social, and economic well-being (p. 18). Meritum Guidelines (2002) similarly defines human capital as the knowledge that employees take with them when they leave

the firm. It includes the knowledge, skills, experiences, and abilities of people (p. 63).[1]

In terms of external reporting, relevant human capital information is an important ingredient for assessing a company. It should be communicated to increase company market value and to respond to the information needs of different stakeholders (Wyatt & Frick, 2010). Beattie and Thomson (2010) showed that the most important company incentives for voluntary human capital information disclosure are to attract new employees and retain employees of high caliber, to demonstrate that the company is socially responsible, to promote a reputation for transparent and accurate reporting, and to provide important information to investors that is not included in mandatory financial disclosures. Beattie and Thomson (2012) empirically confirmed that a broad and complex set of overlapping factors—such as competitive disadvantage, legitimacy theory, stakeholder theory, and other economic disclosure costs—affect intellectual (and human) capital disclosure.

Among the different theories used in previous studies, the signaling theory is useful for describing behaviors when two parties have access to different information. One party, the sender, must typically choose whether and how to communicate (or signal) the information, and the other party, the receiver, must choose how to interpret the signal (Ndofor & Levitas, 2004). In general, individuals can make decisions based on freely available public information and private information that is accessible only to a subset of the individuals or groups. When some information is private, information asymmetries arise between those who hold the information and those who could potentially make better decisions if they had it (Connelly, Certo, Ireland, & Reutzel, 2011). This situation generates information asymmetries because "different people know different things" (Stiglitz, 2002, p. 469). In this regard, Stiglitz (2000) identified two broad types of information where asymmetry is particularly important: information about quality and information about intent. In the first case, information asymmetry is caused because one party is not fully aware of the characteristics of the other party. In the second case, information asymmetry is caused because one party is concerned about another party's behavior or behavioral intentions.

Signaling theory is constituted by a set of key elements that follow a logical order: signaler, signal, receiver, and feedback (Connelly et al., 2011). The signaler is generally represented by a person or a company and is the entity that sends the signal to the other party involved in the exchange. The signal is the information sent by the signaler to the receiver. Ndofor and Levitas (2004) defined a signal as "conduct and observable attributes that alter the beliefs of, or convey information to, other individuals in the market

about unobservable attributes and intentions" (p. 688). Signals may cover, for example, the prestige of the board of directors and top managers or the training investments a company intends to carry out to acquire new talent. They should have some features, namely signal fit, signal frequency, and signal consistency, in order to be reliable and credible for the receiver. The receiver represents the entity that should use the information for decision making (Bangerter, Roulin, & König, 2012). Receivers are usually represented by individuals or groups of individuals. They represent a key agent because their level of receptivity influences the signaling process's effectiveness (Ndofor & Levitas, 2004).

In turn, the signaling process works only if the receiver looks for the signal in terms of attention to the type of information and the interpretation of the information itself; otherwise, the process will be deficient (Connelly et al., 2011). A key element of this phase is the reputation of the agent (i.e., company) sending the signal based on the consistency and effectiveness of the agent's past actions. A good reputation may act as a positive factor by differentiating the signals of highly reputable companies from those of opportunist companies (Ndofor & Levitas, 2004). The last element of the signaling process is feedback, which indicates information given back by the receivers to the signaler in the form of countersignals. Feedback aims to improve the quality and reliability of the future information exchange between the parties involved.

From a disclosure perspective, a company (*the signaler*) can decide to signal its human capital characteristics to improve its relationship with stakeholders. A company can decide to use different document types to convey its human capital information (*the signal*) to different stakeholders (*the receiver*), which in turn may better evaluate the company's characteristics and then make more favorable decisions for the company and for themselves (*the feedback*) (Ndofor & Levitas, 2004). For example, human capital information can be communicated to improve a company's image and reputation (Abeysekera, 2008) to attract potential investors and to decrease the volatility of its share price (Beattie & Thomson, 2012). Instead, from an internal perspective, an increase of human capital information may generate a better alignment of interests between the employer and the employees as well as generate trust within organizations (Thomas, Zolin, & Hartaman, 2009). In this chapter, the signalers are annual reports and sustainability reports. The signal is represented by human capital information, which is measured and analyzed in terms of the type of information, extent of information, and quality of information, while the receiver and the feedback elements are discussed (when possible) by drawing upon the results of previous studies on the use of human capital information by stakeholders.

Review of Voluntary Human Capital Disclosure Literature

Human capital accounting and reporting can be defined as the process of identifying, measuring, and communicating information on human resources (Roslender, Ahonen, & Rimmel, 2007; Roslender, 2010). In Wyatt and Frick's (2010) review of the relationship between human capital information, human capital investment decisions, and company success, human capital disclosure is shown largely to be a voluntary choice by individual managers and that formal disclosure requirements are few. Concerning studies on human capital disclosure, recent analysis has shown an increasing trend in voluntary human capital information disclosure (Mangena et al., 2010; Gamerschlag, 2013). Arvidsson (2010; 2011) noted a decrease in research and development and relational capital information and an increase in human capital information. However, the majority of studies indicate that a human capital information gap exists in annual reports (Table 7.1). In this regard, Petty, Ricceri, and Guthrie (2008) showed that financial market agents are not satisfied with the level and quality of the human capital disclosed by annual reports, and Sakakibara, Hansson, Yosano, and Kozumi (2010) indicated that financial analysts (both sell-side and buy-side) have some problems finding human capital information in public documents. This last result is also confirmed by Luther, Tayles, Huang, and Haniffa (2013) who showed that the human capital information provided in annual reports is limited, un-quantified, nonuniform, and tends to focus on the figureheads of the boards. According to their results, analysts have to rely on alternative sources to obtain their desired information.

However, a few studies carried out on sustainability reports have found that sustainability reports contain several types of human capital information, such as employee training, characteristics, diversity, and equal opportunity (Perrini, 2006; Pedrini, 2007). The disclosure of human capital information in sustainability reports is also confirmed by Cinquini et al. (2012), who found a high number and quality of human capital information characteristics; by Beattie and Thomson (2010) who indicated that sustainability reports are considered good documents by human resources and marketing specialists for human capital information; and by Oliveira, Lima Rodrigues, and Craig (2010). This set of studies considers sustainability reports a potential integrative source for human capital information (and intellectual capital information) in addition to annual reports and other public channels a company can use for external reporting.

Furthermore, a stream of literature has argued for the integration of sustainability reports and intellectual capital reports (Castilla Polo & Gallardo Vázquez, 2008; Pedrini, 2009). From a signaling perspective, Mahoney,

Table 7.1 Selected studies on human capital and intellectual capital disclosure

Authors	*Country*	*Sample*	*Media Used*	*Type of analysis*	*Main results in terms of human capital frequency and quality*
Guthrie and Petty (2000)	Australia	20	AR	Frequency of voluntary ICD	HC is the last reported category with 30% disclosure
Brennan (2001)	Ireland	11	AR	Frequency of voluntary ICD	HC is the last reported category with 22% disclosure
April, Bosma, and Deglon (2003)	South Africa	20	AR	Frequency of voluntary ICD	HC is the last reported category with 29.5% disclosure
Bozzolan, Favotto, and Ricceri (2003)	Italy	30	AR	Quantitative disclosure index	HC is the last reported category with 21% disclosure
Goh and Lim (2004)	Malaysia	20	AR	Frequency of voluntary ICD	HC is the last reported category with 21.9% disclosure; it is expressed mainly in qualitative form
Abeysekera and Guthrie (2004)	Sri Lanka	30	AR	Frequency of voluntary ICD	HC is the second reported category
Oliveira, Rodrigues, and Russell (2006)	Portugal	56	AR	Quantitative disclosure index	HC is the last reported category with 20% disclosure; it is expressed mainly in qualitative form
Sujan and Abeysekera (2007)	Australia	20	AR	Frequency of voluntary ICD	HC is the last reported category with 21% of disclosure; is expressed mainly in qualitative form

Sonnier, Carson, and Carson (2008)	USA	141	AR	Frequency of voluntary ICD	HC is the last reported category
Whiting and Lee (2008)	Australia	70	AR	Quantitative disclosure index	HC is the last reported category with 33% disclosure
Gerpott, Thomas, and Hoffmann (2008)	International	29	AR and website	Frequency and comparison of voluntary ICD	Low level of HC disclosure in both channels
Striukova, Unerman, and Guthrie (2008)	UK	15	multiple reports	Frequency and type of voluntary ICD	HC is the last reported category; it is expressed mainly in qualitative form
Mangena, Pike, and Li (2010)	UK	126	AR	Disclosure quantitative score	HC is the most reported category with 74.6% disclosure
Branswijck and Everaert (2012)	Belgium and Netherlands	55	AR and IPO	Comparison between the documents	Companies report more extensively on HC in their IPO prospectus compared to their annual reports.
Cinquini, Passetti, Tenucci, and Frey (2012)	Italy	37	CSR report	Frequency and quality of disclosure	HC is the most reported category; it is mainly expressed in non-time-specific, non-financial, and quantitative form
Gamerschlag (2013)	Germany		AR	Value relevance of HC disclosure	The amount of HC disclosure increases over time.

Note A: Meaning of abbreviations.
AR, Annual report; ICD, Intellectual capital disclosure; CSR, Sustainability report; HC, Human capital; IPO, Initial public offering prospectus.

Thorne, Cecil, and LaGore (2013) found that companies that voluntarily issue stand-alone sustainability reports generally have higher sustainability performance scores compared to others. In these companies, voluntary sustainability reports are used to publicize and signal stronger social and environmental records to their stakeholders and to differentiate themselves from other companies.

The comparison between different types of public channels may be considered an under researched area because it has been carried out only three times to the best of the authors' knowledge (Table 7.1). For this reason, it is considered an interesting research avenue to gain a better representation of voluntary human capital disclosure (Striukova et al., 2008). To this end, this chapter makes a comparative analysis of human capital disclosure in annual reports and sustainability reports. Annual reports were chosen because, despite their reporting gap on intangibles, they have always been considered the most useful documents to convey voluntary disclosure over time (Mangena et al., 2010). On the contrary, sustainability reports were chosen because they have rarely been investigated in previous intellectual capital literature and because a growing and recent body of literature has demonstrated that they contain human capital information. Moreover, the two types of documents have different natures and purposes; therefore, the comparison can be considered an "extreme case." Annual reports offer shareholders and other interested agents information about companies' economic activities and financial performance. They are based mainly on mandatory requirements but may also contain some voluntary sections (e.g., a letter from a CEO). Conversely, sustainability reports are a voluntary form of accountability that document companies' commitment to the social and environmental impacts of their activities to a wide set of stakeholders. Contrary to most of the previous studies, comparing these documents allows us to verify sustainability reports' potential to play an active role in the external reporting of human capital information and to analyze the similarities between annual reports and sustainability reports in the domain of voluntary human capital disclosure.

Research Method

Sample Selection

The sample consists of 52 annual reports and 52 sustainability reports published by firms listed on the Italian stock exchange in 2011. Several reasons were considered when focusing our analysis on Italian companies. First, the attention to human capital in Italy is considered peculiar compared to other countries because of cultural and institutional factors (Habisch, Patelli,

Pedrini, & Schwartz, 2011). Second, listed companies provide more information to stakeholders compared with nonlisted companies, thus guaranteeing a higher level of data availability (Russo & Tencati, 2009). As shown in the literature, listed companies are usually large and multinational; therefore, they are more visible to the public and subject to political, regulatory, and stakeholder pressure. For these reasons, the amount of information communicated is greater (Mangena et al., 2010). Third, the choice of listed companies is cohesive with the great majority of previous studies that focus on listed companies, thus guaranteeing a better and more coherent discussion of the results achieved. Fourth, previous studies on the Italian setting focus on annual reports (Bozzolan et al., 2003) and sustainability reports (Cinquini et al., 2012) but do not compare them. The set of companies was identified by analyzing websites from each company listed in the Italian stock exchange and using an international website dedicated to sustainability reports (www.corporateregister.com).[2]

The initial search identified 72 companies (environmental reports were not taken into account). Of these, 19 were excluded because they were foreign and cross-listed companies.[3] Of the remaining 53 companies, one company published an integrated report that was not considered in line with the analyzed sample; therefore, it was excluded. Bias and possible overlap between annual reports and sustainability reports were excluded, and all the sustainability reports investigated were stand-alone reports. For each of the remaining 52 companies, the annual reports and the sustainability reports published in 2011 were analyzed. Of the 52 companies, 17 belong to the financial sector, 16 to the manufacturing sector, and 19 to the service sector.

Extent and Quality of Disclosure

Voluntary disclosure literature has used different techniques to measure the extent and quality of disclosure (Beattie et al., 2004). The extent of disclosure can be measured by counting the number of sentences, pages, words, figures, tables, and indicators of the topic investigated. The extent of disclosure is summarized in this chapter by a continuous number and is indicated by the number of times (frequency) the information investigated was found during the analysis (see Appendix A for its definition). Disclosure quality is a complex, multifaceted concept that may be defined in several ways. Its measurement is considered particularly challenging (Beattie et al., 2004). Brown and Hillegeist (2007) demonstrated that disclosure quality is related to information risk. Public documents with high information quality reduce the search for private information and the expected benefits obtained derived from private information. As such, the level of information

asymmetry among stakeholders is reduced. Guthrie, Petty, Yongvanich, and Ricceri (2004) noted that studying the quality of disclosure is the approach most likely to yield meaningful results.

An interesting scheme for analyzing the quality of disclosure was developed by Beattie et al. (2004). It has been used in and has influenced the research design and direction of previous studies on voluntary disclosure literature (Berretta & Bozzolan, 2008; Cinquini et al., 2012). It comprises three quality disclosure dimensions: (1) the *type of measure* dimension, which analyzes quantitative (Q) versus non-quantitative (NQ) information; (2) the *nature* dimension, which analyzes financial (F) versus non-financial (NF) information; and (3) the *time* dimension, which analyzes whether the information disclosed is expressed in historical (H), forward-looking (FL), or a non-time-specific (NTS) way. Beretta and Bozzolan (2008) argue that such a scheme offers a multidimensional and complete descriptive profile of the company's disclosure quality.

To this aim, the scheme analyzes the data in four different manners. The one-way analysis separates the findings in each of the three single dimensions indicated above. The two-way analysis crosses two of the three dimensions and identifies three subsections of quality (time × nature, time × type of measures, and nature × time of measure). The three-way analysis mixes all three categories and shows the most in-depth quality analysis level (time × nature × type of measure). Finally, the fourth level is obtained by linking the three-way analysis and human capital items.

In this study, one-way analysis and the fourth level of the above scheme was applied to investigate the quality of human capital items. After some preliminary tests, the two- and three-way analyses were excluded since they were considered not capable of adding value to the quality analysis. Only the frequency of disclosure was calculated for the indicators without applying the multidimensional scheme.

Content Analysis Process

Content analysis can be defined as a research technique for making replicable and valid inferences from data to its context. This technique allows classifying and analyzing quantitative and qualitative information in a well-specified grid of categories related to a specific topic (Krippendorff, 2004). The seven-step Weber scheme (1985) is a procedure for performing a transparent content analysis that allows readers to check and understand how categories are defined and how findings are obtained. The operationalization of the seven-step of Weber scheme in our research is summarized and described in Table 7.2.

Table 7.2 The Weber scheme

Weber Scheme	*Description of each step*
First step: Defining the recording unit	The recording units are sentences, graphics, charts, and tables. The units of analysis are consistent for coding and counting (Unerman, 2000; Campbell & Rahman, 2010). The photographs are excluded. Few studies have analyzed photographs, and their analysis is considered too ambiguous and requiring content analysis rules that are too complex (Steenkamp, 2007).
Second step: Defining the categories	The framework used comprises two different levels: "HC items" and "HC indicators" (Appendix B). The selection of HC items is based on the analysis of previous literature (Bozzolan et al., 2003; Beattie & Thompson, 2007; Roslender, Stevenson, & Kahn, 2009). In addition, a more accurate sub-classification is made for each of the four HC items identified by specific indicators (Li, Pike, and Haniffa, 2008). By identifying a set of HC indicators for each of the four HC items, more precise information is guaranteed. It also reduces ambiguity and misunderstanding in the document under analysis. The content analysis rules are defined in this phase as well (Appendix A).
Third Step: Test coding of a sample of text	Both the authors (coders) perform content analysis, while one of the authors (trainer) provides coding training. The initial training consists of discussing the research objective, the potential risks linked with content analysis, and content analysis rules. To test the framework and rules, both the authors performed content analysis on a sample of 10 annual reports and 10 sustainability reports. As in several prior content analysis studies, the practice of counting and transcribing the instances of disclosure is adopted to facilitate the comparison of findings. To classify HC disclosure, two different schemes are given to each coder. The first is the multidimensional scheme used to classify HC items according to their quality profile (Table 6). The second scheme is used to classify HC items and indicators. Both schemes are used for each company and for both types of reports
Fourth Step: Assessing reliability	As is normal during the initial coding stage, the initial analysis of sustainability reports and annual reports show some ambiguities between the two coders in the identification of HC items and HC indicators.

Continued

Table 7.2 Continued

Weber Scheme	*Description of each step*
Fifth Step: Revising coding rules	The framework is modified after discussion between the authors.
Sixth Step: Repeating steps 3–5 until reliability is satisfactory	Two weeks after the first content analysis, a second content analysis is performed on the same set of reports by the same coders to test the refined HC framework. Krippendorff (2004) identified three types of reliability: reproducibility, accuracy, and stability. The issue of reproducibility, which ensures the same data can be obtained by independent coders using the same instructions for coding in different locations and at different times, is addressed. Krippendorff alpha is calculated for the HC items (0.92), the time dimension (0.82), the nature dimension (0.88), and the type-of-measure dimension (0.87). For all of them, the Krippendorff alpha level is considered acceptable.
Seventh Step: Coding all texts	The two coders complete content analysis on the remaining 42 sustainability reports and 42 annual reports.
Eighth Step: Assessing achieved reliability	At the end of the process, the full sample findings are compared with the initial findings to assess the coherence between the first and second waves of coding. In addition, the Krippendorff alpha is recalculated on a random sample of 10 sustainability reports and 10 annual reports. The following results are found: HC items (0.90), time dimension (0.85), nature dimension (0.90), and type-of-measure dimension (0.89).

Description of the Findings

The content analysis results indicate that annual reports and sustainability reports disclose human capital information. Sustainability reports show a greater extent of disclosure with an average value of 42.6 pieces of human capital information for each company. In annual reports, the average value is 9.8. In both types of reports, the most frequently reported item is "employee wellness" with 19.3 (sustainability) and 3.7 (annual) pieces of information. This is followed by "employee training" with 12.5 (sustainability) and 3.1 (annual) pieces of information, and "employee characteristics" with 9.0 (sustainability) and 2.6 (annual) pieces of information. The last position was occupied by "employee skills" with 1.9 (sustainability) and 0.3 (annual) pieces of information. The results of the two-tailed paired t-test show that

the difference between sustainability reports and annual reports concerning the extent of the items communicated are all statistically significant (Table 7.3). Both documents display the same rank for the four items, and the results seem to indicate that companies use annual reports to signal a very small part of human capital information while sustainability reports are used to give a broader and more detailed picture. This point is confirmed in the annual reports of some companies that expressly stated the presence of more detailed human capital information in their sustainability reports.

"Employee wellness" indicates the attention companies pay employees and the opportunities companies offer (or will offer) employees. As the literature shows, companies are interested in employee wellness because healthy employees tend to be happier and more productive. The sustainability reports show a more widespread set of information related to employee wellness, while the annual reports focus their attention on three indicators: "employee health and safety," "employee agreements," and "incentive systems." "Employee health and safety" is one of the three most reported indicators in sustainability reports and annual reports.

The attention on health and safety disclosure may be caused by a number of reasons, such as legitimacy (Coetzee & van Steaden, 2011), stakeholder relations (Habisch et al., 2011), and compliance and institutional pressure (Accredia & Censis, 2012). "Pensions and insurance policies" and "employee flexibility" are less-reported indicators and may be considered more internal-oriented and, as such, less relevant for external reporting purposes.

The results for "employee training" display a strong emphasis in both types of documents on disclosing information regarding the "description of training and competence programs." This set of information is reported because it is important to demonstrate to external stakeholders the commitment companies place on improving employee competences. In terms of signaling theory, companies show how much they are investing to increase employee competence and employee job satisfaction because this set of information, or at least a part of it, is considered value relevant. Therefore, companies may be incentivized to disclose it (Bryant-Kutcher, Jones, & Widener, 2008). This information may also be used to attract new talent because it signals the importance companies place on their development and satisfaction (Beattie & Thomson, 2010). Concerning this last aspect, it is important for more information to be signaled about "carrier opportunities" because this indicator has very low representation in these reports.

The third item reported is "employee characteristics." This information can be classified as generic and is used by companies to give stakeholders a general picture of their human resources. The only information related more to value creation is the indicator "employee efficiency index," but it is among

Table 7.3 Descriptive statistics of human capital disclosure[4]

	Total disclosure		*Mean value*		*Standard deviation*		*t and Sig. (2-tailed)*
	Annual report	*Sustainability Report*	*Annual report*	*Sustainability Report*	*Annual report*	*Sustainability Report*	*Annual report vs. Sustainability report*
Employee characteristics	136	469	2.6	9.0	1.52	4.95	−1.984 (.001)
Employee training	163	648	3.1	12.5	1.94	6.38	−983 (.001)
Employee skills	15	98	0.3	1.9	0.31	1.07	−1.273 (.001)
Employee wellness	192	1001	3.7	19.3	2.05	13.46	−3.256 (.001)
Human Capital	506	2216	9.8	42.6	6.38	25.53	−2.849 (.001)

the lowest indicators reported (in annual reports, its extent is zero). The other indicators describe employees' personal and general characteristics, such as age, seniority, and staff diversity (Table 7.4). Annual reports show a very low extent of information, while sustainability reports give a more in-depth overview. This difference can be considered physiological in the sense that annual reports are designed to give information on business results and activities as well as on results principally associated with the value creation

Table 7.4 Extent of human capital indicators

Human capital indicators	*Total disclosure*		*Mean value*	
	Annual report	*Sustainability report*	*Annual report*	*Sustainability report*
Staff breakdown by age	0	66	0.0	1.3
Staff breakdown by seniority	17	54	0.3	1.0
Staff breakdown by diversity	13	83	0.3	1.6
Staff breakdown by job function	10	87	0.2	1.7
Rate of staff turnover	96	120	1.8	2.3
Employee efficiency index	0	59	0.0	1.1
Number of education programs	20	17	0.4	0.3
Training and competence programs	143	631	0.5	1.3
Staff breakdown by education	2	61	0.0	1.2
Employee quality	13	37	0.3	0.7
Employee health and safety	85	400	1.6	7.5
Pensions and insurance policies	3	32	0.0	0.6
Career opportunities	9	48	0.1	0.9
Value added per and to employee	3	85	0.1	1.6
Employee flexibility	2	28	0.0	0.5
Employee agreements	54	85	1.0	1.6
Employee company social activities	0	85	0.0	1.6
Employee satisfaction	3	42	0.1	0.8
Equal employee opportunities	5	75	0.1	1.4
Employment litigations and legal actions	5	34	0.1	0.6
Incentive systems	23	87	0.5	1.7

process. Conversely, sustainability reports have a social scope and as such give information on human resources. Therefore, it is reasonable to find this item less reported in annual reports.

Finally, the last item reported is "employee skills." Its extent tended to be zero in both types of document. Employee skills represent what talents people learn over time and are often contingent upon a person's job description or rank. For example, more experienced managers will likely have better leadership skills than hourly workers will. In addition, high-level executives will usually develop better problem-solving skills than lower ranking employees will. Employee skills may be considered a strategic asset by companies and therefore necessary for growth and competitive advantage (Luther et al., 2013). For this reason, many skills are not externally reported in order to avoid a possible competitive disadvantage (Beattie & Smith, 2012). These results are in line with previous findings in Luther et al.'s (2013) and Sakakibara et al.'s (2010) studies.

Tables 7.5 and 7.6 indicate that both types of documents report human capital information prevalently in non-time-specific, non-financial, and quantitative terms. In the *time orientation* dimension, the majority of disclosures are non-time-specific with a high level of historical information, especially in sustainability reports. Conversely, in the *nature of information* dimension, a heavily unbalanced disclosure exists between financial and non-financial information, with the latter being reported for more than 90% in both documents. Finally, the *type of measures* dimension is the more balanced category, especially in annual reports. Regarding the *time orientation* dimension, the low percentage of forward-looking information in both documents indicates that companies have adopted a conservative way to

Table 7.5 Human capital quality analysis

One-way analysis	*Total disclosure in annual reports*	*%*	*Total disclosure in sustainability reports*	*%*
Time dimension				
Historical (H)	78	15.4	630	28.5
Non-time-specific (NTS)	410	81.1	1520	68.6
Forward-looking (FL)	18	3.5	66	2.9
Nature				
Financial (F)	31	6.1	213	9.6
Non-financial (NF)	475	93.9	2003	90.4
Type of measure				
Quantitative (Q)	309	61.0	1730	78.06
Non-quantitative (NQ)	197	39.0	486	21.93

Table 7.6 Interactions between human capital items and quality dimensions

Human Capital		*H/NF/NQ*	*NTS/NF/NQ*	*FL/NF/NQ*	*H/F/NQ*	*NTS/F/NQ*	*FL/F/NQ*	*H/NF/Q*	*NTS/NF/Q*	*FL/NF/Q*	*H/F/Q*	*NTS/F/Q*	*FL/F/Q*
Employee characteristics	AR	0	34	0	0	0	0	31	64	4	0	3	0
	CSR	0	19	0	0	0	0	157	278	5	5	5	0
Employee training	AR	0	55	10	0	0	0	10	73	4	5	6	0
	CSR	0	159	12	0	0	0	121	288	3	25	34	6
Employee skills	AR	0	7	0	0	0	0	0	4	0	0	4	0
	CSR	0	32	7	0	0	0	22	37	0	0	0	0
Employee wellness	AR	0	91	0	0	0	0	28	60	0	4	9	0
	CSR	0	257	0	0	0	0	238	340	28	62	71	5

report information. In fact, companies do not indicate what they intend to do in the future to maintain and satisfy their employees and to engage them in work activities.

The high percentage of non-financial information in both types of reports is caused by the nature and characteristics of human capital, which is composed of competence, skills, and training activities and is often difficult (and also inappropriate) to describe in financial terms. The only information disclosed in financial terms is the amount of investments in training activities, while the other information is displayed using non-financial language. In addition, a higher extent of quantitative information is present, especially in the sustainability reports.

Concerning the intersection between human capital items and quality dimensions (Table 7.6), both types of reports show similar quality characteristics for the four items. "Employee training," "employee wellness," and "employee skills" are reported in non-time-specific, non-financial, and non-quantitative terms. This indicates that companies communicate what they have done during the year to manage employee needs and increase their competence levels and skills. Instead "employee characteristics" is reported using historical, non-financial, and quantitative information. Finally, some forward-looking information is reported just for "employee training" and "employee wellness".

Discussion of the Findings

Compared with previous literature, the results of this study are different from Striukova et al.'s (2008) results concerning UK companies that found annual reports showed a higher extent of human capital information compared to sustainability reports. Our results also contrast with Beattie and Smith's (2010) findings in the UK setting, which indicates that annual reports and webpages are considered the most effective forms of communication for human capital information. Concerning the higher extent of human capital information, the Italian setting may be influenced by a specific model of corporate social responsibility, characterized by a specific set of societal values, expectations, and legal and political economic institutions, called "Agora" (Alberada, Lozano, Tencati, Midttun, & Perrini, 2008). As shown by Habisch et al. (2011), Italian companies have developed many initiatives for employees with the aim of improving their satisfaction and involvement compared to other countries. However, the disclosure is made with an optimistic view of the role of human capital for the companies' purposes.

Similar to other studies (Mäkelä, 2013; Kent & Zunker, 2013), the companies primarily give positive news, and human capital is highlighted as

efficient and skilled without any faults or weaknesses. In addition, companies do not provide any information about how human capital may be linked with the value creation process, and they do not report any tensions in the relationship between the company and the employees. The role of human capital in the value relevance process is narrated in an abstract and vague way in annual reports, which should instead adopt a more precise and value relevance language.

Regarding the quality profile of the information reported, findings reveal a high amount of quantitative information compared with non-quantitative (i.e., qualitative) information, especially in sustainability reports. Such a quality profile is coherent with the information needs of financial market agents. As indicated by Henningsson (2009), financial market agents prefer to manage information on intangibles expressed in a quantitative way. Indeed, when information is expressed in a quantitative way, financial market agents have the ability to make more precise analyses (Flöstrand & Ström, 2006; Orens & Lybaert, 2007). The high extent of human capital information expressed in quantitative terms is because of the characteristics of the report itself. Sustainability report guidelines, such as Global Reporting Initiative guidelines, emphasize the importance of using indicators, tables, and graphics to display the results and targets obtained in order to give a more objective and concrete representation of a company. These characteristics may be particularly interesting because they have the potential to increase temporal and spatial comparative assessments of human capital information. Regarding the time orientation dimension, the results show a predominance of non-time-specific information and historical information in both documents. Henningsson (2009) showed that historical information is considered important by financial market agents because it offers the opportunity to make a solid analysis of company characteristics. A similar reasoning can be used for non-time-specific information (Abhayawansa, 2010).

Concerning human capital indicators, it is interesting to compare the results of this study with Lim et al.'s (2010) study, which analyzed the importance fund managers assigned to 15 indicators in their investment decision-making process. Among these, nine were found possessing different extents, especially in the sustainability reports analyzed. Specifically, some examples found were "staff satisfaction index," "ratio of value added per employee," "number of percentage of full-time, part-time contract, or temporary staff," "quarterly, half-year, and yearly staff turnover," "average years of experience," and "average age of management and operational staff." In addition, Beattie and Thomson's (2010) survey showed that the top five most important information used internally by company were "employee remuneration procedures," "employee turnover," and "recruitment and selection procedures,"

which are all pieces of information disclosed in the sustainability reports. "Employee training and development" and "workplace safety" in particular had a good level of detail. These results, both in terms of the extent of information and the quality of information, indicate that sustainability reports collect human capital information that may reduce the informative gap of annual reports. To this end, sustainability reports could be used to build the mosaic of information needed to better analyze a company's profile.

On the contrary, the results show annual reports' inability to report an adequate level of human capital information. Over time, the level of human capital reported by Italian companies' annual reports seems to remain the same if compared with the previous study of Bozzolan et al. (2003). Concerning the non-disclosure of human capital information in annual reports, Beattie and Thomson (2012) argued that some barriers prevent it from occurring correctly. Roslender, Stevenson, and Kahn (2009) argued that companies do not disclose human capital information in order to avoid undesirable consequences such as giving unions and employees the chance to bargain for better wages and work conditions. In addition, Ax and Marton (2008) found a weak statistical association between human capital disclosure in annual reports and internal human capital management practices. This indicates that although companies have internal management practices, they do not disclose such information. On the contrary, they communicate sensitive human capital information through safer private channels that integrate and clarify existing public information (Holland, 2004).

In addition, financial market agents showed average interest concerning human capital information (Lim et al., 2010). Johanson (2003) noted some reasons that could explain this aspect. First, financial market agents may not understand the importance of human capital because of their accounting and finance mentality. Second, they do not trust the validity and reliability of the human capital indicators communicated. Third, they exaggerate the risk of losing key human capital resources by companies. Finally, they do not feel secure about management's ability to take action and manage human capital. Financial market agents, such as sell-side analysts, focus on short- and medium-term financial and economic measurable metrics and are interested exclusively in information regarding management's competence as a surrogate for the quality of the company's human capital (Abhayawansa, 2010; Henningsson, 2009). They currently seem to regard other human capital information in a variety of ways; sometimes the information is viewed as a resource and sometimes as a risk or a nonflexible cost problem (Almqvist & Henningsson, 2009). As demonstrated by Coram, Mock, and Monroe (2011), non-financial information, such as that related to human capital, receives greater attention from financial analysts

when the financial information has a positive trend; however, it receives little attention when the financial information trend is negative. This may indicate that financial analysts use human capital information only when they are sure about the company's future (and positive) business results and make more accurate evaluations and subsequent investment decisions.

These aspects related to annual reports and human capital information seem to negatively affect the *feedback* dimension of the signaling process concerning annual reports. The receivers, and in particular the financial market agents to which annual reports are mainly directed, appear to be disinterested in acquiring and using public human capital information. This aspect may negatively affect the incentive to offer accurate human capital information in the future. This is because companies will not be encouraged to reveal private information by financial market agents, who in turn will not use the basic information provided by companies for decision making. In such negative recursive interactions, financial market agents, who do not have proactive roles in seeking public human capital information from companies, indirectly incentivize companies themselves to adopt conservative conduct, which causes "human capital deadlock information." This can be viewed as a "loss-loss" situation where both the agents involved in the "relational exchange" seem to preclude themselves the opportunity to acquire more visibility and reputation (companies) and more useful information (stakeholders).

According to Lim et al. (2010), one possible way to increase attention on human capital information could be to specify which method a company is using to determine the human capital information externally reported. Another possible way to increase the interest in human capital information on the part of financial market agents could be communicating more value relevance information (while being careful to protect the most important information from competitors). A few examples are "how employees find new revenue sources," "how employees create new revenue opportunities," and "how employees improve customer relationships and efficiency." This kind of information could reduce the possibility for a company to be underrated because of a lack of relevant human capital information and increase market opportunities for companies with valuable human capital information (Bryant-Kutcher et al., 2008).

The results regarding the relevance attributed to sustainability reports are mixed. Companies declare that the most important users of sustainability information are financial market actors (Arvidsson, 2010), while some studies indicate that financial market agents do not use this information. Sustainability reports are often considered symbolic and ceremonial documents (Milne & Gray, 2013) and as such are considered a waste of time

by financial market agents (Campbell & Slack, 2011). This means that few financial market agents (or none) read them, and they consequently miss the human capital information therein. For instance, sell-side analysts are unwilling to read sustainability reports or the related sections of annual reports because they judge them immaterial and irrelevant for their decision making. Campbell and Slack (2011) argued that the pressure to increase sustainability reports' credibility should come from the reports' potential users, such as financial market agents, who demand a richer and greater level of social (and environmental) information for their forecasting models. In addition, employees (McInnes et al., 2007; Johansen, 2010) and customers (Gally & Baldon, 2006) do not consider sustainability reports reliable documents. However, recent studies have shown that sustainability reports help reduce information asymmetry and lead to better investment decisions, especially by institutional investors (Cho, Lee, & Pfeiffer, 2013; Mahoney et al., 2013).

The lack of relevance may have caused (and will cause) ineffectiveness and the absence of any signaling process. It is possible that companies will continue to communicate human capital information without feedback by stakeholders. In this way, sustainability reports' role as a signaler of human capital information risks being compromised in a definitive manner. Is human capital information inserted in the "wrong report?" What could happen if the same human capital information now present in sustainability reports were inserted in annual reports? These questions emerged from the analysis and could be the objective of further studies.

Conclusions

The analysis carried out reveals that quality profiles and some indicators showed by the sustainability reports seem to be coherent with human capital information that financial market agents, such as funds managers and sell-side analysts, use in their decision making. Concerning annual reports, they confirm their gap by showing just a brief and generic form of information, whereas sustainability reports show a more in-depth human capital picture. In this respect, sustainability reports may be used to supply information on human capital by companies and stakeholders to acquire information on human capital. However, the low credibility of sustainability reports is a big obstacle that does not permit the valorization of human capital information.

Some of the weaknesses indicated may be overcome by the following suggestions. First, it could be important to provide education and training to some categories of stakeholders to increase their ability to appreciate the

relevance of human capital information and the content of sustainability reports. Second, harmonization of sustainability report guidelines (many companies use different guidelines simultaneously, at least in the Italian setting) and the diffusion of a deliberate approach to making accounting rules (Cooper & Morgan, 2013) and organizational transparency (Rawlins, 2008) would guarantee a better level of relevance and comparability of the reports. Third, developing an integrated approach to reporting (Abeysekera, 2013) could provide a more complete overview of company characteristics and performance with the aim to reduce information asymmetry. Finally, a pragmatic suggestion is the development of two separate reporting strategies: (1) companies produce a "primary" report concentrating on a few key points, which all stakeholders accept as being of primary importance; and (2) companies produce "specialized" reports that address the requirements requested by each specific stakeholder group or at least the most important.

This study possesses some limitations related to the content analysis, such as the measurements of the quality of disclosure and the discretionary understanding of disclosure by the researchers. In addition, the study does not apply statistical analysis to verify if human capital signals related to sustainability reports and human capital signals related to annual reports produce different effects. Further, the dimension of the sample size and the absence of an international comparison do not allow the results to be generalized. To this end, future research should focus on international comparisons in order to assess whether and how human capital information is signaled through a wide variety of company documents. From a methodological point of view, a more refined method to measure human capital quality profiles could be developed. From a capital market perspective, a qualitative analysis of the importance given to human capital reporting by fund managers as well as buy-side and sell-side analysts could be important to understanding their point of view. Finally, an analysis of cultural and institutional aspects' influence on human capital disclosure could be another interesting avenue for further research.

Notes

1. The concept of human capital used in this paper adopts an "accounting / reporting" lexicon. We specify this point because defining human capital is an ongoing debate in HR literature (see e.g., Wright & McMahan, 2011).
2. Corporateregister.com is an online directory of corporate responsibility reports. Most of the reports are available free of charge after user registration. The website was used in conjunction with analysis of corporate websites in order to obtain a full set of sustainability reports.

3. A foreign company indicates a company registered to do business in a state or jurisdiction other than where it was originally incorporated. For example, a company originally incorporated in Germany, France, or Spain that operates in the Italian market and is listed in the Italian stock exchange was removed from the final sample.
4. In Table 7. 3, the first two columns show the extent of human capital information reported in the two reports across all 52 sampled companies, while the mean columns report the average number of sentences reported by each company on each of the human capital items.

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APPENDIX A

Content Analysis Protocol

- Extent indicates the sum of each specific human capital item or indicator appearing in annual reports or sustainability reports.
- In calculating the extent, we do not recount each occurrence of human capital information (ignore multiple occurrences of a given item and/or indicator). For instance, the employee satisfaction index for year XX is one frequency. If this information appears two times in the same report, it is only counted once.
- Code for sentence (do not code for word and theme).
- Code for graph, table, and indicator.
- Do not code for photograph.
- If a concept can be inserted into two different items or indicators, apply the dominance principle (insert the concept in the area that seems to be more closely linked).
- One sentence is coded and counted as one frequency.
- Inside a table, one year is coded and counted as one frequency.
- One graph is coded and counted as one frequency.
- One indicator outside a table is coded and counted as one frequency.
- Analyze the voluntary sections of annual reports but not the mandatory sections. Such disclosure includes, among other things, the chairman's statement, chief executive's review, social and environmental reports, and risk disclosures.
- Do not analyze the corporate governance, environmental, community relations, and public relations administration sections of sustainability reports.
- Do not consider guidelines used by companies to develop the reports (GRI, AA1000, Italian guidelines for social reports, etc.) because companies may use several guidelines simultaneously.

- Quantitative information: facts and claims represented by numbers.
- Qualitative information: facts and claims presented in narrative (not numerical) form.
- Historical information: facts and claims referring to the previous year compared to the year of the report analyzed.
- Non-time-specific information: facts and claims referring to the year of the report analyzed.
- Forward-looking information: facts and claims referring to the following year compared to the year of the report analyzed.
- Financial information: facts and claims represented by monetary numbers.
- Non-financial information: facts and claims presented in nonmonetary number/form (time, quality, percentage, quantity).

APPENDIX B

Definition of Human Capital Items and Indicators

	Items/Indicators	*Meaning*
Employee characteristics	Staff breakdown by age	Biological age of employees in companies. Includes qualitative descriptions of age-related advantages/strengths of company employees and indicators such as average age of company's employees and age distribution.
	Staff breakdown by seniority	Seniority, defined broadly, means the length of service with an employer and indicates how stable the workforce is over the years.
	Staff breakdown by diversity	Diversity is defined as the division of classes among a certain population. The information refers to the mix of, for example, ethnicity, gender, and sexual orientation. Disclosures also include employee diversity police
	Staff breakdown by job function	Indicates how the staff is divided among the company's functions (production, marketing, accounting and finance, sales, human resources, etc.).
	Rate of staff turnover	Staff turnover is the rate at which an employer gains and loses employees. High turnover may be harmful to a company's productivity if skilled workers often leave and the worker population contains a high percentage of novice workers.
	Employee efficiency index	Typically measured as output per employee or output per labor-hour: an output that could be measured in physical terms or in price terms, for example, revenue or customer per employee, operating costs per employee, market share per employee, etc.
Employee training	Number of education programs	Includes the number and description of education programs.
	Description of training and competence programs	Includes training policies, training programs, training time, attendance, number of employees trained per period, and training results/effectiveness/ efficiency.

	Education and training expenses	Includes the amount of investments made for employee training, for example, the total amount of expenses, average expense for employees, average expense for courses.
Employee skills	Staff breakdown by education	Education and qualified courses for directors as well as for other employees.
	Employee quality	The knowledge and skills that can be useful for accomplishing jobs. It refers to the current positions held outside the company by directors and professional qualifications. It also indicates what is acquired during the job in terms of tacit, explicit, and implicit knowledge.
Employee wellness	Employee health and safety	Programs, services, and incentives to ensure that employees live healthier and safer lives at work, home, and on the road. Disclosures include the number of fatalities, absenteeism, lost time injury rate, gravity of fatalities, and frequency of fatalities.
	Pensions and insurance policies	Pension and insurance policies are individual plans for the future and ensure financial stability for employees during their retirement.
	Career opportunities	Disclosures include employee development policies and programs (e.g., succession planning), recruitment policies (e.g., internal promotion), and information on changes in employee seniority and internal promotion rates.
	Value added per and to employee	Measured using the following formula: operating profit plus salaries, wages, and payroll expenses divided by the average number of employees.
	Employee flexibility	Strategies used by employers to adapt employees' work to their production/ business cycles; methods enabling workers to adjust working lives and working hours to their own preferences.

Continued

Appendix B Continued

	Items/Indicators	*Meaning*
	Employee agreements	Employee agreements set out employment conditions between an employee or group of employees and an employer.
	Employee social activities	Indicates the activities carried out by the company to satisfy employees' needs outside company boundaries. These activities include sports associations, cultural associations, nonprofit associations, etc.
	Employee satisfaction	Employee satisfaction refers to the employee's sense of well-being within his or her work environment. It is the result of a combination of extrinsic rewards, such as remuneration and benefits, and intrinsic rewards, such as respect and appreciation
	Equal employee opportunities	Equal treatment of people regardless of social and cultural differences. Related disclosures include employee equality policies and initiatives taken for enforcement gender management.
	Employment litigation and legal actions	Employment litigation is a lawsuit in which an employee sues an employer or an employer is sued because of an employment-related issue. Discrimination or harassment claims may be at issue. Other types of employment litigation may involve pay, overtime, or scheduling, safety violations or issues related to benefits such as insurance, workers compensation, or pensions.
	Incentive systems	A system in which rewards, either monetary or non-monetary, are offered to employees and used in order to stimulate their motivation and commitment.

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