The Usefulness of Innovation and Intellectual Capital in Business Performance

The Financial Effects of Knowledge Management vs. Disclosure

Bleoca, Lavinia

COPENHAGEN BUSINESS SCHOOL
SOLBJERG PLADS 3
DK-2000 FREDERIKSBERG
DANMARK

WWW.CBS.DK

ISSN 0906-6934

Print ISBN: 978-87-93483-42-2
Online ISBN: 978-87-93483-43-9

THE USEFULNESS OF INNOVATION AND INTELLECTUAL CAPITAL IN BUSINESS PERFORMANCE:
THE FINANCIAL EFFECTS OF KNOWLEDGE MANAGEMENT VS. DISCLOSURE

PhD Series 39-2016

Lavinia Bleoca

THE USEFULNESS OF INNOVATION AND INTELLECTUAL CAPITAL IN BUSINESS PERFORMANCE:

THE FINANCIAL EFFECTS OF KNOWLEDGE MANAGEMENT VS. DISCLOSURE

Doctoral School of Business and Management | **PhD Series 39.2016**

CBS COPENHAGEN BUSINESS SCHOOL
HANDELSHØJSKOLEN

The Usefulness of Innovation and Intellectual Capital in Business Performance

The Financial Effects of Knowledge Management vs. Disclosure

Lavinia Bleoca

Supervisors: Jan Mouritsen, jm.om@cbs.dk, Eric Bentzen, eb.om@cbs.dk

Doctoral School of Business and Management

Program in Technologies of Managing

Copenhagen Business School

Lavinia Bleoca
The Usefulness of Innovation and Intellectual Capital in Business Performance: The Financial Effects of Knowledge Management vs. Disclosure

1st edition 2016
PhD Series 39.2016

ISSN 0906-6934

Print ISBN: 978-87-93483-42-2
Online ISBN: 978-87-93483-43-9

Doctoral School of Business and Management is a cross disciplinary PhD School connected to research communities within the areas of Languages, Law, Informatics, Operations Management, Accounting, Communication and Cultural Studies.

Acknowledgments

The study years at Copenhagen Business School have been amazing and challenging at the same time. After completing my second master year here, I began my Ph.D.-program. During these four years of commuting between Sweden and Denmark, I met a lot of people: the leadership at Copenhagen Business School, my supervisors, colleagues, technical staff and lots of others. These meetings have really enriched my life, with every discussion.

I left a good job and financed my four years of study by myself. I could have chosen many other Ph.D.-programs in the world, but I chose Copenhagen Business School for its open environment.

I give my special thank you to my distinguished supervisors, Professors Jan Mouritsen and Eric Bentzen. I am very fortunate to have them as mentors, because they are the ones who many would like to be guided by.

Without Professor Jan Mouritsen's support and guidance, this dissertation would never have had this final form. I also thank him very much for presenting my study at the European Institute for Advanced Studies in Management's "11th Interdisciplinary Workshop on Intangibles, Intellectual Capital and Extra-financial Information" in Athens, Greece, in September 2015.

Professor Eric Bentzen's comments shed light upon many parts of this work. I also have to thank him for my employment as university lecturer at Copenhagen Business School.

I nevertheless owe a great thank you to Professor Sof Thrane, for his support during possible and impossible hours and situations. He always offered right, adequate and exact solutions just in time.

I further thank my work-in-progress seminars discussants, professors Torben Pedersen, Per Nikolaj Bukh and Gunnar Rimmel, who contributed with crucial comments to the quality of this scientific work.

I am grateful for my external advisor's opinions, professor Brett Trueman from the Anderson School of Management at UCLA, who was of great help during my writing stay in Los Angeles, California, USA.

I further thank the Ph.D. assessment committee, Dr. Allan Hansen, Copenhagen Business School, Denmark, Dr. Stefano Zambon, University of Ferrara, Italy, and Dr. Per Nikolaj Bukh, Aalborg University, Denmark for their deep-going analytical comments and improvement suggestions provided on this work.

My deepest gratitude also goes towards the analysts, executives and managers who participated in the survey and who contributed with the primary data of this study.

I would further like to thank all my colleagues and professors who helped me out with the pilot survey study.

My colleagues Niels Joseph Lennon and Thomas Frandsen have been great tutors during my accommodation period at Copenhagen Business School, and nonetheless offered support and kindness during all our conversations.

I also thank my family very much for the unconditional help and stability offered throughout my educational journey.

Thank you all for your valuable contributions to this study, which treats a topic that has fascinated me from the start!

Lavinia Bleoca

Frederiksberg, April 2016

This study was presented at the European Institute for Advanced Studies

in Management's "11th Interdisciplinary Workshop

On Intangibles, Intellectual Capital and Extra-financial Information"

Athens, Greece, September 17-18, 2015

by Professor Jan Mouritsen, CBS

Mouritsen (2015)

Abstract

The practices of 18 Scandinavian (Danish, Swedish and Norwegian) and 11 U.S. publicly listed companies are herein evaluated on basis of a research model inspired by the Danish Guidelines of Intellectual Capital Reporting (MERITUM, 2002; J. Mouritsen et al., 2003), to define the capacity of knowledge management and innovation of creating financial value, directly and/or through the mediation of disclosure.

Two fundamental issues are therefore raised when evaluating the participant firms' abnormal returns in comparison to their competitors: a) internal knowledge management and b) existence of any conditioning of information in public disclosure.

Modern intellectual capital studies do not successfully relate content analysis to market effects like profitability and abnormal returns, nor do they study the interrelation between intellectual capital types and generated effects in relation to disclosure practices. This study applies this improvement of understanding value development by focusing on the causality processes which occur in the internal knowledge management and reporting practices of firms.

The identified management profiles' characteristics were found to vary in terms of both internal management traits and reporting engagement. Against the common belief that more detailed reporting results in higher market value, this study identifies that the most successful leaders are: a) concerned with a more detailed and more complex internal management of knowledge than its representation in external disclosure and b) are rather reluctant to reveal details about their innovation and general practices in disclosure.

It was identified that the high earners of this study have the greatest conformity with the formulated intellectual capital research tool, and nevertheless the greatest abnormal returns in relation to competitors from the same industry. They were also the only ones who valued the management of intellectual capital and innovation over strategizing and reporting practices, which the other types of less successful mangers did not. These "Pessimistic High Earners" were the only group who managed all defined intellectual capital types (human, relational, process and technological). On the contrary, companies which were

not as successful financially were found to disclose a higher amount of information, and in the most optimistic and futurising manner.

The analyses of this study are explorative and even if not highly generalizable, the results should be valued as first insights within the study topic of why disclosure itself may not always be an optimal tool of specifying financial value and where differences between practical and accounted value might show themselves, to improve the reflection of internal practices in future external disclosure.

Keywords: strategic management, innovation, intellectual capital, disclosure, firm valuation, latent class analysis, data mining

Sammanfattning

Denna studie analyserar praxis i 18 skandinaviska och 11 nordamerikanska företag på basis av en vetenskaplig model inspirerad av de danska intellektuellt kapital rekommendationerna (MERITUM, 2002; J. Mouritsen et al., 2003). Avsikten med denna analys är att identifiera de medverkande företagens kapacitet av att skapa ekonomiskt värde via kunskapsbaserad ledning och innovation, direkt eller indirekt via redovisningsaktiviteter.

Två grundläggande problematiseringar ifokusläggs i detta syfte: a) den interna kunskapsledningen och b) eventuella begränsningar i informationsåtergivandet mot intressenterna, via redovisning.

Moderna relaterade studier länkar inte innehållsanalys till marknadsvärde, och studerar ofta inte förhållandet mellan olika typer av intellektuellt kapital och deras effekter i samband med redovisning. Denna studie föreslår därför ett analysperspektiv av att undersöka olika kausala samband som sker inom både intern kunskapsledning och rapportering utåt mot omvärlden.

De identifierade profilerna varierar både i interna ledningsegenskaper och redovisningsambitioner. Trots den vanliga tron att ett mer detaljerat redovisningssätt leder till högre marknadsvärde, kan det visas i denna studie att a) de mest framgångsrika ledarna är generellt mer fokuserade på att uppnå en detaljerad intern ledningskapacitet än dess redovisning utåt, samt b) att de ofta är rätt så skeptiska mot att avslöja information om sina innovationer och praxis i årsrapporterna.

De lönsammaste ledarna hade den största motsvarigheten gentemot den utvecklade modellen, och dessutom de högsta vinstandelarna i förhållande till konkurenterna från samma industri. De var också de enda som värderade ledning av intellektuellt kapital och innovation över strategi och redovisning, vilket de andra grupperna inte gjorde. Dessa “Pessimistiska Höglönsamma Ledare” var den enda gruppen som hanterade alla typer av analyserat intellektuellt kapital (humant, relationellt, processuelt och teknologiskt). De mindre lönsamma företagen däremot redovisade mer information, och på det mest optimistiska och futuristiska sättet.

Även om analyserna i denna studie är explorativa och därför inte högst generaliserbara, så bör dessa resultat värderas som första insikt inom forskningsämnet om varför redovisning inte alltid är ett optimalt verktyg för att återspegla finasiellt värde och att uppmärksamma om var skillnader mellan praktik och dess rapportering kan finnas, i syftet av att förbättra motsvarigheten mellan framtida redovisning och intern kunskapsledning.

Nøgleord: strategisk ledelse, innovation, intellektuel kapital, oplysningskrav, værdiansættelse, latent klasse analyse, data mining

Table of Contents

CHAPTER 3 – RESEARCH DESIGN AND METHODOLOGY 45

CHAPTER 4 – DATA ANALYSIS 77

TABLE OF FIGURES

TABLE OF TABLES

TABLE OF EQUATIONS

Chapter 1 – Introduction

Rooted in strategic management theory, the resource- and the knowledge-based views withstand that intangible resources and capabilities are major sources of sustainable competitive advantages. Yet, a clear distinction is not made between strategizing about and measuring knowledge when engaging in increasing competitiveness on basis of intangible resources and innovation.

Little is known about the actual representation accuracy of these specific practices in external reporting. Because intangible resources are idiosyncratic in nature and offer therefore diverse differentiation opportunities, internally through management or externally through reporting, it is problematic to identify drivers of economic value when seeking to assess firms' future market value.

This study's main contribution to the research field lies within a suggested analysis of the strategic use of innovation, knowledge management and intellectual capital as catalysts of value creation and competitive advantages, with a direct linkage to the firms' reporting practices based on attained abnormal returns in relation to competitors from the same industry. In order to increase the understanding about the practices of decision-making and innovation in modern corporations, as well as about the measurement of quality and knowledge when related to market value, a causal approach is proposed. The causal relationship within the management of intangibles is often omitted in modern related studies and by making intellectual capital resources and their attributes visible, it can be analyzed how successful companies attain better results while also evaluating the efficiency of associated accounting calculations.

Through this dedicated study, more can be understood about the existing tensions when corporations are assessed in relation to their market value and profits based on external disclosure, as well as about their operations and future value. Although accounting increases transparency about the actions and future aspirations of firms in the best of stakeholders, the disclosed information is sometimes perceived as insufficient and generalized, which in the case of heterogeneous resources and idiosyncratic management structures makes financial positioning and market valuation of companies more difficult and unreliable for investors. Organizations and investors would therefore strongly benefit from more knowledge about how intangibles are created, measured and reported about, which tensions currently dominate these practices and how to best avoid them.

---

1 Research Questions and Objectives

This dissertation deals primarily with analyzing firms' internal management and external disclosure practices, in the scope of increasing the understanding about financial value creation based on innovation and intellectual capital. Little is yet known about the practice of creation of measurable managerial objects which concern corporate knowledge, nonetheless about measuring the actual financial effects of these resources and their associated activities. Furthermore, while companies increasingly disclose their plans and ambitions in diverse external reports, not much is known about how intangibles and innovation plans are actually disclosed in direct comparison to firms' in-house management. Do corporations attain financial effects primarily based on their in-house management or through disclosure? Do corporations report transparently about what and how they manage, or do they report in disagreement with their internal practices? Are their internal practices efficient at creating market value, and sole drivers of financial success or are their chances eroded/enhanced by their reporting practices?

In agreement with modern knowledge management and accounting literature, positive financial effects are expected from better knowledge management and improved disclosure practices. Gottschalk (2005, p. 1) argues that modern prac-

tices are increasingly concerned with the importance of intellectual capital as a production input. “Intellectual capital” was the term coined to accrue future profit and market shares through positive effects of intangibles. Intangible resources increasingly represent the foundation of competitive advantages for firms and are believed to help in attaining and sustaining superior business performance and value generation.

The competitive advantage of firms is commonly observed as an unexplained variance between the market capitalization of a firm and its replacement value of intangible assets, often attributed to value generated through the management of intellectual capital (Hall, 1992; Edvinsson and Malone, 1997; Stewart, 1997; Lev et al., 2005; J. Mouritsen et al., 2005; Ittner, 2008). Even if knowledge itself cannot be allocated, cf. Bukh and Mouritsen (2005), it can be modularized (define what type of knowledge should be used), organized (define where should it be located) and economized (define how much should be invested in knowledge development and sharing). The need to manage and account for intellectual capital has increased since publicly listed companies need to make their intangible management quality evident. The companies’ published external reports and achievements are often regarded as important sources on basis of which the firms are valued on the market. In spite of recent development within the area of accounting, it is herein argued that the practices of reporting may not yet be in synthesis with corporate management practices. This argument should therefore be further studied, in the scope of facilitating international valuation based on knowledge management and innovation.

An overviewing question is therefore raised as follows:

> Is there a relationship/representation between what is organized in-house and reported about externally in companies, at different levels of abnormal financial returns?

This problematization is a research topic which has not yet been studied in intellectual capital literature and deserves therefore full dedicated attention.

Financial realizations are as well-known needed for economic sustainability. But are such effects in abnormal returns created on basis of knowledge management and are they linked to increased reliability and more accurate representation of intangibles and their management in external reporting?

Figure 1 illustrates the targeted research area:

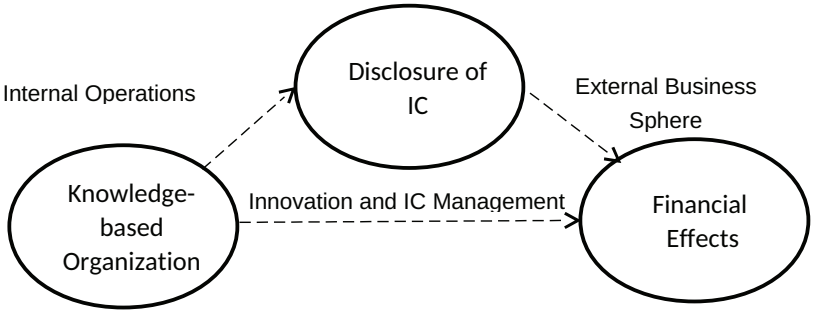


Figure 1 The Targeted Research Area

The dedicated research questions specify hereby the major intents of conducting this study:

- *How do firms attain higher financial effects through an effective internal management of intellectual capital and innovation, in relation to reporting?*
  (Knowledge Management -> Disclosure -> Financial Effects)
- *Are there any benefits from asymmetrical information or innovation type given intellectual capital's assumed idiosyncrasy?*
  (Knowledge Management -> Financial Effects)
- *Does disclosure offer an accurate representation of that which is organized, or is such information conditioned and in which way?*
  (Disclosure -> Financial Effects)

The first research aim is to analyze the corporate practices around a classification based on differences in management traits, at different market value levels. In this scope, utility theory is applied. The utility of knowledge management (actual abnormal returns) is contrasted with the respondents' risk traits (perceived profitability). This study suggests hence a classification based on lev-

eled market value in relation to intrinsic confidence of efficiency, in the scope of defining a discrepancy in relation to competitors from the same industry.

Research Objective 1 (Causality)

The first research objective is to understand management of knowledge as causal calculations of value, by specifically identifying causal patterns in the firms' innovation and intellectual capital management practices in relation to their financial effects. The usefulness of knowledge is in this way directly and accurately analyzed based on its exchange value. Nevertheless, the view on innovation in process management practices is important. Is innovation an output of intellectual capital as suggested in the consulted theory, or is it an input? And which approach might be most efficient in business? The theoretical question asked is **"How accurate is the formulated intellectual capital model to evaluate management efficiency in terms of intellectual capital and innovation practices?"**, per identified managerial profile.

Research Objective 2 (Asymmetrical Information and Innovation Benefits)

The second research objective is to understand management of knowledge as knowledge peaks, where open/closed innovation creates economic rent differently, and where innovation itself can be developed in-house or leased/acquired. The asked theoretical question is therefore **"Are there any benefits from asymmetrical information or innovation type given intellectual capital's assumed idiosyncrasy?"**, per identified managerial profile.

Research Objective 3 (Transparency)

The third research objective is to speculate around a certain conditioning of information in disclosure practices. Does decision-making about intangible resources mobilize knowledge only internally or all the way through the external business sphere? Are future returns hurt by any of the firms' practices? If firms' competitive advantages are not sustainable and the information disclosed is too generalized, consequences like uninformed investments and decisions and increased costs for both the firms and their investors might arise, at the ex-

pense of decreased profitability, innovation and economic development. Therefore, it is of interest to define **"How much less, if, is disclosed about externally than managed internally?"**, per identified managerial profile.

1.1 Scientific Justification

Whereas the resource-based and the knowledge-based views have evolved to prescribe corporate competiveness on basis of knowledge resources and their effects, intellectual capital and innovation are the main means by which this is realized. Most strategic management theories recommend the use of knowledge and capabilities in successful innovation, yet their prescriptions are somewhat limited in relation to measurement practices and accounting systems do not reflect the progress of innovation-based activities and resources straightforwardly (Smith, 2005; Reed et al., 2006).

Roos et al. (1997, p. 15) specify that the theoretical roots of intellectual capital can be tracked down to two major streams of thought: the *strategic* stream and the *measurement* stream. The first one analyzes the creation and use of knowledge, as well as the relationship between knowledge and success or value-creation, linking intellectual capital to competitive advantages. The second stream focuses on the need to develop a new information system, measuring non-financial data alongside with the traditional financial ones, so that the strategizing of intellectual capital can be reliably managed and decision-making can be based on actual observations and measurements. There must hence be consistency between the measured objects and their strategic scope of creating competitive advantages.

The measurement practices and their reflection into external disclosure seem thus to be related to the practices of strategizing about intellectual capital. These two areas are yet not fully synchronized, when judging by the current discrepancies in market valuation of companies[1]. With the advent of the intellectual capital literature stream and recent changes in intangible reporting standards, the valuation of companies has been remarkably improved and adjusted according to the modern needs. Whereas the heterogeneity of sustainable competition has been boosted for decades through various strategic management

1 When the market-to-book ratio is equal to unity, the market volatility of stock prices can be considered to be reliably explained through accounting and the tensions between performance management and the market value of the firms can be reasonably neglected as biases of management control systems.

theory advances[2], the capacity of the accounting systems to reflect this idiosyncrasy of the companies' management control systems remained somewhat limited. Lev et al. (2005) write that the issues of identifying, measuring and reporting internally generated intangibles (advertising, research costs, training expenses, internally developed goodwill) and assets are more common than reporting the external ones. While identifiable intangible assets can be recognized individually, as a part of a group of assets or as part of an entire enterprise, unidentifiable assets cannot be recognized individually.

It is hence herein argued that this internal dynamism is somewhat constrained when translated into public disclosure and that this process is still associated with certain limitations, leaving some important corporate actions undisclosed. What is valuable in one company might not be valuable in another one, resulting in diverse measurement systems which are not comparable across companies and sectors (Marr and Starovic, 2003). Lev et al. (2005) also outlined a tendency of "a lack of harmonization (comparability) among firms, industries, or different years for which the data are published" as a common problem within intellectual capital works and other voluntary information on intellectual capital. The intangible resources presented in accounting are fewer than the intangible resources which are of internal importance for a company, and these are usually firm-specific.

Given these arguments, it is herein argued that an over-viewing deepening study is necessary. New knowledge in this still under-researched area can heavily contribute to efficiency in companies' inter-departmental activities, practices and their financial effects. Since the internal functions of performance management and accounting practices of firms differ and the quantifiable results expressed in annual reports do not always satisfactorily outline the firms' incentives from the perspective of a reliable comparability, this study can bring new knowledge into the issues of knowledge management and valuation by outlining which practices are efficient and which ones are not.

2 The efforts of strategic competitive management became apparent during the 1960s, when the firm was placed at the center of economic analyzes. I. a., Penrose (1995) and Chandler (2009) strived to identify the firms' "best practices" by increasing the strategies' impact on corporate performance.

1.2 Contribution

The novelty of this work lies not only in its primary data and unique inferences, but also in the fact that it applies a current intellectual capital model to evaluate both internal management and external accounting practices. The informative survey which provided the primary data was developed on basis of the structure of this employed intellectual capital model, and the secondary data (disclosure) was reliably linked through this same structure.

The intellectual capital model was applied onto the data after accounting for financial effects at three different levels: high-earners, mid-tire earners and low-earners in relation to competitors from the same industry. This group division allowed for the creation of three “management profiles”, where the financial realizations (positive or negative abnormal returns) allow for determining the efficiency of the managerial traits and practices in the respective groups.

This study is hence exploratory and it is valuable because it targets market valuation based on associated practices of knowledge management and reporting through hands-on empirically-based confirmatory analyses in relation to existing guidelines of intellectual capital classification. The analyzed companies are stock-listed economic agents and vital pillars in the business environment.

The research design is performative cf. (Mouritsen, 2006), in the sense that this study does not just verify á priori defined expectations, but also adds new knowledge and inferences though extended exploratory analyzes and triangulation of all relevant sources of information. By defining implications and strengths created at the micro level, limitations of global firm comparability can be diminished. Organizational development and economic growth can be supported by presenting how already successful firms manage their businesses.

Since intellectual capital management is a relatively new research area, different organizations, institutions, companies, boards of directors and investors would benefit from the findings. By reading about what makes some managers more successful than others given the raised questions, the readers can improve their practices. This research can also be useful in the valuation process of corporations for potential shareholders or investors, who can learn how to compare companies from different areas rightfully and understand the underlying importance of intellectual capital and innovation better in business. Nevertheless, this work can also be a source of further research within the scholarly field of intel-

lectual capital and business management. Last but not least, the interest of reporting in the right manner can hopefully be increased.

This study is highly suitable for managers and diverse analysts and investors, internal or external to companies, with the ambition of improving their efficiency. Internal corporate aspects are revealed to the reader based on the study-specific primary data collection to offer additional insights and increase the understanding about the usefulness of knowledge management, as well as its relation to the public and stock market through disclosure. Successful managerial qualities and practices which contribute to actual success are outlined in the current study, to allow the readers to understand how to extracting the maximum knowledge out of the available new types of corporate information and data.

1.3 Disposition

The different chapters and their content are hereby outlined to familiarize the reader with the content of the dissertation and serve as a guide throughout the elaboration process. The chapters are organized as follows: **Chapter 2** is a literature review of the considered schools of thought, ending in a theoretical improvement discussion. **Chapter 3** presents the methodological approach, model construction and data collection phases, whilst **Chapter 4** presents the empirical analyzes and their results. **Chapter 5** discusses the findings and obtained results, concludes the dissertation and offers advice for further research.

Chapter 2 – Collected Works

The proposed literature model incorporates several important theories in an interdisciplinary design: strategic management, accounting and intellectual capital theory.

This chapter discusses how the static character of the resource-based view and the perfect competition model of equilibrium were further developed into the knowledge-based view to contain dynamic capabilities. In the dynamic resource-based view and rent creation based on the intellect, judgments and decision-making of managers, as well as increasing returns on investment are associated with the idiosyncratic nature of intellectual capital (Arthur, 1994). Intangibles can be managed as a knowledge stock or flow (Bontis et al., 2002; Gottschalk, 2005, pp. 57-58) and processes can be refined in order to create unique, inimitable and sustainable advantages.

The intellectual capital view is the school of thought which is consulted to map the best ways to identify, manage and most importantly measure intangible resources when seeking to increase corporate performance and profitability, as it allows for the disaggregation of intangibles and outlines measurement guidelines for distinguishing, transforming and measuring knowledge. The productivity of innovation can hence be related to firms' operational processes and performance in a more profound manner, nonetheless be linked to the market through external reporting.

These theoretical frameworks deal increasingly satisfactorily with general recommendations of intellectual management and knowledge-based activities yielding economic rents. Yet, performance measurement systems and external reporting need to become more integrated with strategizing to account for shortcomings in market

valuation. When the measurement practices are efficient in capturing and describing innovation and intellectual capital activities, a better overview is offered over their capacity and value.

Although the intellectual capital concept can be decomposed, existing recommendations are rarely applied in practice, nonetheless made absolutely comparable through measurement due to the vast diversity of existing guidelines and practices in external accounting. Internal performance management is often even more differentiated, since this is a strategic resource which is well-protected. Accounting and performance measurement systems need hence to become more adapted to the scope of their existence, namely to capture intellectual capital activities and their effects and transparently describe plausible future returns on investment and optimized decision-making.

A suitable intellectual capital model is therefore employed, to structure the research framework. This model is to later be applied on the empirical data to study three formulated theoretical improvement propositions identified throughout the course of the literature review.

---

2 Foundations of the Conceptual Model

The proposed study areas are strategic management, intellectual capital and accounting. These readings aim to help the researcher reflect characteristics of the schools of thought. Rare and unique resources and knowledge are core tenets of the resource-based and knowledge-based schools of thought (i.a. Cohen and Levinthal, 1990; Coase, 1992; Arthur 1994; Penrose, 1995; Zander and Kogut 1995; Teece et al., 1997; Hoskisson et al., 1999; Loasby, 1999; Drnevich and Shanely, 2005a; Drnevich and Shanely, 2005b; Mackey and Barney, 2005; Peteraf, 2005; Verspagen, 2005, p. 490). From the intellectual capital school of thought, the thesis seeks to cover the classification of capitals and emergence of its need in management (i.a. Edvinsson (1997; Sveiby, 2010; Mouritsen, 2003; Bukh and Mouritsen, 2005; Mouritsen, 2006). From accounting and standardization, this work consults diverse types of intellectual capital valuation frameworks and models i.a. Meritum project (2002) and the Danish Guidelines of In-

tellectual Capital Reporting (DMSTI, 2003). In addition to theory, current empirical or theoretical studies are also consulted in the scope of positioning this work within the research field.

In order to develop an appropriate evaluation tool and identify shortcomings in these literature domains, the areas of interest are cross-tabulated with the structure of the intellectual capital evaluation model proposed by Mouritsen et al. (2003) into what the researcher found to be concepts of importance for the study. This tool offers the possibility of distinguishing between managerial resources, activities and their effects, a fact which is vaguely expressed in the strategic management theories in terms of clearly delimited categories, making measurement difficult in practice although managers are offered a lot of guidance on processual activities. The analytical structure is two-dimensional and modular, in order to define a classifiable ground of the knowledge resources' contribution to financial outcome, cf. Table 2.

Theory vs. Evaluation Criteria	Resource- and Knowledge-based views	Intellectual Capital Theory	Accounting and Standardization
Resources (What is created?)	Capabilities, experience, diversity of knowledge and demographics of management, as well as firm characteristics	Human, relational, technological and process capitals	Intangibles (financial and non-financial indicators), as well as financial indicators
Activities (What is done?)	Decision-making, strategizing and market competitiveness on basis of differences in the offer bundles	Knowledge and intellectual capital investments, as well as measurement of innovation and progress	Public disclosure incentives, narratives and improved visualization of the management objects
Effects (What happens?)	Diversified corporate profiles and strategic management approaches, creating specialization and niches	Increased managerial control over the investments, strategic focus and improved reflection of market value (second-order management)	Enhanced standardization and analytical insights within firms' investments both internally and externally, more tangible future value descriptions

Table 2 Foundations of the Conceptual Model

Conditioning of information is possible through accounting calculations, which mediate and mobilize capabilities, processes and activities both internally and externally. Strategy is directing operations, innovation and disclosure practices differently through differing knowledge management architectures and therefore, diversity also occurs in the firms' financial effects. Internally, the intellectual capital of the companies and their innovation activities are subject to different dynamic processes. When transcribed into accounting calculations, value undergoes a transformation based on knowledge capitals and their modularity, mobilizing other processes depending on their inscriptions and attributes. While "resources" and "activities" are more commonly approached and managed, it is within the level of "effects" where current tensions lie both within theory and practice. When knowledge is substituted by intellectual capital, innovation becomes an outcome which directly affects companies' ability to perform and capitalize. Hence, the knowledge-based view is currently not just a theory, but a managerial issue of turning diversity and knowledge into profit by mobilizing important aspects internally and externally.

The effects of corporate management are currently mainly described in short narratives and at the best in diverse reports, yet where they are often covered briefly and mechanically. Future ambitions are often not supported by existing practices, data and statistics due to the fact that imitation is common and that when revealing internal sensitive information, companies might lose ground to competitors. Innovation is herein an important value driver and theory has long struggled with its measurement, just as other effects of interest. These practices are often based on the premises of the resource- and knowledge-based views, where the resources of firms are created on basis of the firms' capabilities and uniqueness. Yet, there is little or no reference to management objects and their outcomes. Although accounting literature encourages mobilization of objects and deep reflections upon their effects, the shape the final reports are delivered in is sometimes arguably generalized. Corporate dynamism and diversity can therefore be inadequately reflected in accounting and reporting, indicating the need for integration with the intellectual capital and accounting schools of thought in the performance and measurement systems. A main shortcoming is that relevant aspects are not treated descriptively and scientifically enough.

In order to satisfactorily report on management activities and decision-making, accounting, standardization and disclosure practices must be synchronized with the strategic inclination of a firm and operationalized in reliable key terms in

order to reflect market value more accurately. The managed knowledge objects need to be approached on a more separated and disentangled level, where the existing practices and aspirations can be broken down in the scope of comparability and increased control over intangible investments. These are common issues and desires in modern corporations, when the management modules are assembled into both internal practices and external disclosure. Hence, the importance of accounting as a change agent should be approached through both quantitative and qualitative manners. As adequately remarked by i.a. Guthrie et al. (2004), current practices of intellectual capital management need to take more regard to the quality of the disclosed information, not just to the key indicators' frequency and abundance.

Last but not least, diversity is vital to companies and derives from existing variability within the markets, business systems and other factors, controllable or non-controllable to the companies. Through awareness of idiosyncratic capabilities and variation of firm characteristics on the markets, a company can turn uncontrollable exogenous factors into endogenous knowledge resources along time. Even if not always ownable, this strategic focus safeguards firms against the effects of i.a. natural selection on the markets, where the industry regulates itself along time[3]. Diversity is a well-covered aspect of the resource- and the knowledge-based views, where rarity and uniqueness are some of the most valuable prescriptions offered to businesses.

The rest of this chapter focuses on discussing the connection of the knowledge-based value-creation process to obtainable competitive advantages and to market value through the prism of the proposed schools of thought. The literature review chapter ends with a "Propositions of Theoretical Development" part (Section 2.5), where the identified research gaps and limitations of current theory, studies and practices are synthesized in a summary to be further elaborated upon in the methodology chapter.

2.1 The Resource- and Knowledge-Based Views

Modern strategic management theory such as the resource- and the knowledge-based views argue that unique resources and in particular knowledge resources

3 The works of Nelson and Winter (1982) and Porter (1980, p. 44) offer more details about industrial evolution theories.

are becoming increasingly profitable and necessary for corporate performance sustainability and decision-making. These schools of thought further contend that by accounting for and clearly indicating their intent, aspirations and capabilities along with future value opportunities, companies can guard themselves against declines in investments, financial returns and a high volatility of stock prices. I.a. Bukh et al. (2005) write that the competitiveness of companies no longer concerns their positioning in the market vis-à-vis with the competitors; instead, it increasingly concerns the understanding of internal resource architectures, capabilities and competencies.

Gottschalk (2005) writes that within the resource-based view, performance differences across firms can be defined as variances in the firm's resources and capabilities. This framework has an internal focus and firms are considered to be highly heterogeneous on basis of their internal resource bundles. The theory has two main key points: first, the resources are determinants of firm performance and second, the resources must be rare, unique, valuable and difficult to imitate. Only then can a competitive advantage be created. A firm must continuously enhance its resources and capabilities in order to capitalize during changing conditions, where exploitation of existing resources and development of new resource positions helps it grow (pp. 43-45). The process in which tangible and intangible resources are reorganized, combined and turned into activities to create value is defined as "resource mobilization". Resource allocation, resource leveraging and resource deployment are more appropriate for describing the value-creation process based on tangible resources. Knowledge and competence cannot be allocated, as the person controlling it technically possesses it (p. 51). Yet, when an organization can understand its intellectual capital and how to exploit and develop their traditional resources better than their competitors, knowledge can become a superior strategic resource, even if some of the traditional resources used are not unique (pp. 55-56).

The concept of business evolution and knowledge transformation is treated in the works of Penrose (1995) as a matter of service usage opportunities, where possibilities change as knowledge changes. The type of knowledge possessed by a firm's personnel and the obtainable services on basis of its material resources are closely connected. Since the knowledge of the personnel tends to increase with experience, the service and resource bases of firms tend to change as well. As "free" goods, innovation and knowledge-building are valuable economic drivers which help creating heterogeneity of firms by influential power,

not necessarily through economic value per se. The resulting products and services are however not free in the same sense.

Drnevich and Shanely (2005b) state that within strategic management research, a firm's profitability in a given market depends on a) market-level economics, b) the ability of individual firms to generate revenues to cover their costs, c) the relative skills of firms to do this more efficiently than their competitors. Competitive advantage is thus a matter of understanding of a firm's production efficiency, R&D investment and marketing skills at different levels. The authors distinguish between five different areas of creating competitive advantages:

- firm resources and capabilities
- firm strategy and managerial actions
- competitor resources, capabilities, behavior and actions
- consumer demand and behavior
- industry/market macro-level structural and contextual characteristics.

Value creation roots within a firm's activities, which are important for a firm's success, being particularly critical in highly competitive or changing markets in which the firms must maintain their competitive advantages. At the same time, new value-creation prospects must be assured for future profits and sustainability, usually within the following value-creation areas: a) actual firm-level performance, b) internal firm resources and capabilities, c) external constituencies to the firm such as consumers and d) industry/market macro-level structural and contextual characteristics. The consumers choose the firm which gives them the greatest surplus, whilst the firm needs to generate profit by balancing its price in relation to its costs, adding up to the overall definition of value in business. However, the identification of costs (direct and indirect) and various types of returns has proven to be difficult. This transaction equation is one of three proposed conceptual mechanisms in which strategic theories link to the business environment within research. Namely, in linkage by transaction the analytical unit is economic exchange, in which activities such as informal social exchanges, market exchanges, long-term contracts, mergers and strategic alliances are included. The "social exchange" of transactions usually applies business network theories, in which the firms' identity and boundaries can become unclear without the role of management. Therefore, linkage by managerial role is a second conceptual mechanism which aids in business decision-mak-

ing, where firm growth based on resources and offered services needs to be overseen by the firm management. However, since the role of management and its contribution during periods of good or bad profitability can be somewhat unclear, a third conceptual mechanism, linkage by atmosphere is introduced. Linkage by atmosphere in itself does not imply a certain decision or particular transaction logic on the firm and its management, but a homogenous cultural and normative business environment which is likely to reduce search and decision-making costs. The core idea is that the more participants which share an atmosphere conducive to trade, the easier it is to explain firm dynamics based on the social business context, including culture, legal and regulatory regimes, normative structures and common historical ties. (ibid, 2005b)

Mackey and Barney (2005) performed a deepening study on the managerial talent and competitive advantages outlined by Drnevich and Shanely (2005b). Their analysis affirmed the need of several levels: a) the individual-level resources controlled by the manager, b) the industry-level competitive advantages derived from their resources and c) the market-determined ability of a manager to appropriate the rents these competitive advantages generate. The resource-based level applies to the individual manager and firm level, to identify conditions under which leadership could become a competitive source for the firm on the market, i.e. at the macro-level in which the transaction exchanges occur. The business context of these interactions comprises the conditions under which managers will or will not be able to appropriate the rents their specific managerial talents generate. Value and competitive advantages are generated by rare and inimitable management skills, but the market will generally allocate these resources imperfectly across competing firms. The existence of heterogeneous management skills and imperfectly competitive labor markets have therefore a direct impact on the amount of rent that can be generated on basis of managerial talent. Variation in management skills is a requirement for the existence of competitive advantages since it is the unit of analysis and an effect realized at the firm level.

Peteraf (2005) also built a study on Drnevich and Shanely's (2005b) work, in which the resource-based view itself links a firm to its external business environment and the players within. The resource-based view was applied as the conceptual mechanism which links to the three analysis levels directly, being in such way distinct from the transactional approach and its limitability to the firm/individual level. By further developing the definition of the two core as-

pects under research, competitive advantage and value generation, the author claims that the resource-based view distinguishes between sustainable and regular competitive advantages in such a way that if it is an imitable competitive advantage, it is not sustainable and therefore short-lived. By changing the definition of competitive advantage from terms of profitability to terms of relative value created, the definition of competitor is made more tangible. Thus, the old concept of competitive advantage in which a firm earns more profit than the other firms with which it competes, is changed to the definition of "a firm having a competitive advantage if it is able to create more economic value than the marginal (breakeven) competitor in its product market". The notion of total value remains in agreement with Drnevich and Shanely (2005b), i.e. that total value created (consumer and producer surplus) captures the benefits to society of producing net of the economic costs. Since this fact calls for an assessment of the customers' needs, a second cross-level connection is supported. At the organizational level, the resource-based view is rendered effective at explaining the corporate advantages on basis of resources and capabilities, just as it has been conceived to from early strategic management days. The resource-based view can serve as a process-oriented approach instead of a content-oriented one through central internal focus on resources and capabilities and their connection to strategic decision-making. The resource-based view, in similarity with the resource-allocation process theory, acknowledges the importance of tacit knowledge. This is justified through the specification that recent research allows for external influence of the previously internally-focused resource allocation methodology through i. a. customers' influence. The resource-based view is also suitable for analyzing firms dynamically across time, although in its original form, it is a static equilibrium model of creating and sustaining competitive advantages. As ordinary capabilities turned into dynamic capabilities with agents of change, dynamism was added to the framework. Analysis of firms is therefore possible at different points in their life cycles; history matters and a young firm may shape its evolutionary trajectory for years ahead.

In a subsequent review of these articles, Drnevich and Shanely (2005a) note that while the dynamism of the firms and of the environment includes changes of resources and capabilities along time, it is within these phenomena where new business opportunities arise and value can be created. Resources may persist and their value might change to positive or negative, as a result of exogenous environmental shocks. Therefore, strategic management research should

address the trajectories by which resource change, due to internal dynamics or in response to the environment through more focused and longitudinal designs.

The broad and general character of the resource-based view was further refined through the knowledge-based view, as one of its subsequent emerging frameworks (Hoskisson et al., 1999)**.**

Loasby (1999) specifies that economic progress can be improved through knowledge growth (pp. 2-3). Yet, certain path dependency is expected in knowledge-based business models, cf. Arthur (1994) and business specialization often reduces flexibility of operation. Zander and Kogut (1995) identified the path dependent factor within the social and tacit capability repository of firms. Two main reasons for this development is that knowledge builds on previous knowledge (Cohen and Levinthal, 1990; Verspagen, 2005, p. 490) and that costs of administering knowledge can be high (Coase, 1992)[4].

Teece et al. (1997) nevertheless defined the dynamic character of skill acquisition, management of knowledge and know-how, stating that the main driving force of competitive advantages and value creation lies within the internal technological, organizational and managerial processes of the firms. This was a major change from the industrial-oriented approaches commonly applied before, such as Porter's Five Forces Model. Economic rents in IO-models are monopoly-based (Teece, 1984) and the core tenet is to place a firm vis-à-vis with its competitors. Dynamic capabilities allow for integration, building and reconfiguration of internal and external competences to address rapid changes in the environment, with learning as a fundamental strategic issue (Grant, 1996; Teece et al., 1997). Core competences must be distinctive from the competitors' and difficult to replicate to be efficient. Likewise, firm competences, which are assembled in clusters spanning over individuals and groups, enable distinctive activities to be performed, through firms' organizational routines and processes. Since learning tends to be local and "history matters" in the sense that previous decisions might have formed a firm's current position, the importance of path dependence is amplified where conditions of increasing returns exist. Increasing returns are usually generated from network externalities, presence of complementary assets, supporting infrastructure, learning by using and scale economies in production and distribution. Since firms have these

4 "The Institutional Structure of Production" by Ronald H. Coase was Nobel Prize awarded in 1991. Coase specified costs of finding, interpreting and using knowledge; in particular knowledge of future potential and methods of successful capitalization on the market.

multiple choices, the prior positioning of a firm can affect its ability to exploit increasing returns. (Teece et al., 1997)

2.1.1 Knowledge Management and Intellectual Capital

The investments in innovation and intellectual capital have been found of interest in different previous empirical studies. Several authors have linked the resource-based view to intellectual capital practices, where innovation plays an important role to firm performance (Reed et al., 2006; Tayles et al., 2007; Yang and Kang, 2008; Cheng et al., 2010; Herremans et al., 2010; Hsu and Wang, 2010; Surroca et al., 2010).

Wiig (1997) identified that "intellectual capital management and knowledge management are multi-dimensional and cover most aspects of a firms' operations. There is overlap but there are also major differences." While knowledge management is considered to be "hands on", the integration of intellectual capital is considered necessary for the processes, objectives and perspectives to become dynamic. Their value is maximized only when they are renewed continually and used effectively. Seleim and Khalil (2011) identified a partial mutual relationship between intellectual capital and knowledge management, where certain aspects of knowledge drive the firms knowledge bases (intellectual capital). Especially, knowledge application helps in accumulating intellectual capital, while human and organizational capitals are the most influential dimensions of knowledge management such as knowledge accumulation, documentation and transfer. In this thesis, knowledge management is cross-tabulated with the intellectual school of thought to develop an understanding of both the flows and stocks of knowledge present in the study, and analyze their interactions empirically.

Kianto et al (2013) assess that the management of intangibles is a key managerial mechanism, where competitiveness affects and mediates financial performance. Herremans et al (2011) found that firms with a higher uncertainty towards their intellectual capital design system faced greater issues in capitalizing on their knowledge and develop successful capabilities. Ling (2013) found that knowledge management is a moderator of intellectual capital on firm performance, where the strategizing of a firm can increase performance by applying its intangible stocks. These aspects will also be studied in the empirical

evaluation, though the proposed mediation of knowledge on basis of intellectual capital practices, and thereafter through disclosure upon performance.

Kianto at al (2014) developed four possible scenarios of the interaction between knowledge management and intellectual capital. This article is not empirically-based, just theoretic. This study aims to add to the discussion through an extended empirical analysis, with a new evaluation model. This model takes into account the disentanglement of the intellectual capital elements, internal causality and applies actual financial performance.

Status Quo

Questions still remain regarding the strategic measurement and administration of intangibles and knowledge, their classification and their effects. While knowledge management describes a lot of the activities and objectives of using intangibles for increased performance, the effects are not always captured through detailed non-financial measurements in modern empirical studies. Of further interest to this study is therefore to analyze if different strategies are applied in relation to flows and stocks of knowledge and how communication flows in relation to the management objects, i.e. analyze the competitiveness between the managed intangibles and the causality of outputs of financial and non-financial type. In this way, strategy is not directly separated from the management objects of intellectual capital, but offers a survey over its effects on intellectual capital, innovation and disclosure. Furthermore, it would indicate the dynamics of play to generate innovation and value added, which are to be discussed in the following sections. In addition, the actual measurement of internal and external management practices is often omitted in relation to innovation and intangible inputs and will nevertheless be considered in the literature study.

2.2 Innovation and Economic Rent Generation

Grant (1991) i.a. argued that in the resource-based view, business strategy is viewed more as a challenge of Ricardian rents, cf. Liebeskind (1996)[5], where a

5 Ricardo (1926 [1821]), *apub* (Liebeskind, 1996), gave in his original treatise on rents an example of "good land" as a rent-bearing resource, since it produces more output per acre than poor land, having hence lower costs of agricultural production. Liebeskind (1996) describes Ricardian rents in modern industrial competition as being commonly generated from firms' knowledge or from monopoly rents if the product is unique.

firm's returns on resources (which constitute its competitive advantage over and above the real costs of other resources) is more powerful than the obtainable monopoly-based rents, i.e. returns to market power, which also are rooted in the resources of organizations.

In the knowledge-based view and alternative rent creation methodologies on basis of knowledge and information, returns on investment are believed to be more profitable than the resource-based view prescribes. As Edvinsson (1997) appropriately described in Skandia's Value Scheme, a company's market value is the sum of its financial and intellectual capitals and the goal of intellectual capital is to improve the value-generation capabilities of firms. Roos et al. (1997, p. 107) agree, specifying that financial capital is characterized by diminishing returns, while intellectual capital enjoys increasing returns to scale.

Kirzner's (2000) work has nevertheless been a great advance within the field of economics. The author argued that knowledge- and information-based decisions lead to effective solutions, being profitable for the companies. Kirzner's disequilibrium theory on markets was modeled through intrapreneurship, which is a result of invested efforts and knowledge, change process initiation, incentives to develop through unique capabilities and efforts of optimization of the existing resources. Due to differing information spaces, i.e. diverse industrial sectors, firms are believed to regroup their production resources in new and effective ways and cash in on profits by performing and acting within the sphere of offer and demand, experimenting further. The companies' specific knowledge increases the value-surplus perception of their customers. By altering their offers on the market on basis of previous experiences and diverse targeted refinements, their products can become more optimized and refined.

The author argues that in the Schumpeterian market-equilibration, equilibration is a systematic process in which market participants acquire more and more accurate and complete mutual knowledge of potential demand and supply attitudes. The Austrian school sees this as a process of entrepreneurial discovery, where imperfect information results in a discovery which reduces one's previous ignorance about a business opportunity. Entrepreneurial discovery is seen as gradually but systematically pushing back the boundaries of sheer ignorance, increasing mutual awareness among market participants and in turn, driving prices, output and input quantities and qualities towards values consistent with

equilibrium, a state which equals the complete absence of sheer ignorance. (ibid, 2000, p. 5)

> *"[…] while Schumpeter's innovating entrepreneur is responsible for creating disequilibrium 'in the first place', it is the 'Kirznerian' entrepreneur who 'springs into action upon recognizing a disequilibrium situation'." (Kirzner, 2000, p. 243)*

Whilst the Schumpeterian (2003 [á pub 1912]) creative destruction mainly acts at the macro-economic level by disrupting equilibrium, the Kirznerian (2000) information-asymmetry approach serves more as a micro-focused perspective, where the same goals are targeted: making profit by innovating to cause change, occupation and growth. Profitable business opportunities are possibilities where new services, products and organizing manners are introduced and sold to a cost which covers at least their expenses. By innovating, the pioneers of the Schumpeterian view are followed by swarms, whilst in the Kirznerian view, there is no need for a new market. The market itself is a process in change and evolution. Information is not equally shared by all individuals and by taking advantage of this fact, entrepreneurs can produce products and services cheaper and increase profits. The Schumpeterian innovation-based disruptions are rarer than the Kirznerian trends. Whilst the first-mentioned create, the latter explore. New insights and information are genuine but perishable, since they are reproduced and optimized when equilibrium is restated on basis of knowledge and awareness about them. The value creation mechanisms in these two discussed settings are strongly related to processes and their effects are both concomitantly in action on modern markets.

Foss and Ishikawa (2007) specify shortages within the capacity of the resource-based view of building competitive advantages. It lacks a dynamic perspective and builds on the competitive equilibrium (i.e. "perfect competition" model), generating rents based on resources' best abilities. Whilst the Schumpeterian approach contends the equilibrium theory which is most often criticized in the resource-based view limitations, their approach is based on capital theory, which is an essential part of the dynamic resource-based view. Through entrepreneurship, particular "specialized resource combinations" are possible to develop as a product of the entrepreneurs' judgment and the judgment of entrepreneurs in itself is a necessary complementary resource to not only compete on basis of price, which is often the case in equilibrium models based on resources' "best use". In an equilibrium setting, where all the possible combina-

tions of capital goods can be priced, all prices reflect scarcities of resources and capabilities, imputation is perfect and strategies, likewise, are recognizable and fully pricable, rendered as good or as bad as any other strategies. When all peaks are known, a search of the landscape yields zero profits and no competitive advantages exist. Even if highly specialized resource combinations consist of resources, many of which can be priced, by earning on the rent of such a combination, individual price can be priced away through pricing the combination itself. If the entrepreneurs are rich in prior experiences and theories of the landscape within which they trade, they can easily recognize a high appropriate value of a bundle, simply based on their judgment and choice. In actuality, entrepreneurs have only imperfect models or theories, nobody has perfect information and foresight. Through these differences between experiences and choices, competitive advantages are made possible and can be sorted under the heading of "asymmetric information', although this state is the outcome of a process of searching and judging between the market and the entrepreneurs which occurs over time. Following Kirzner's approach of defining capital assets in terms of subjective, individual production plans, which are formulated and continually revised by profit-seeking entrepreneurs, the actual place of any capital good in the time sequence of production is given by the market for the capital good, in which entrepreneurs bid for factors of production in anticipation of future consumer demands. Hence, it is the capital good's place in the structure of production as conceived by the entrepreneurs, and not only the physical properties of capital goods that can be traded over time, adding up to a widely debated concept of strategic management: "resource complementarity".

2.2.1 Innovation and Intellectual Capital

Previous works have linked the knowledge-based view to intellectual capital theory in empirical studies of knowledge and innovation (Harlow and Imam, 2006; Martínez-Torres, 2006; C. Chen et al., 2009; Craighead et al., 2009; S. Chen and Wang, 2010).

Kalkan et al (2014) find that the effects of strategizing, intellectual capital and innovation on firm performance are positive. Phusavat et al. (2011) identified that the effects of intellectual capital and its key components positively affects financial productivity, based on an analysis of annual reports studies. However, as most related studies, these indicators are financially-based indices (Value

Added Intellectual Coefficient) and not focused on the soft measurements of intangibles and innovation which this study aims to contribute with.

Chang et al (2013) found that firms which pay attention to their levels of intellectual capital and innovation investment inputs attain greater returns to scale and are more financially effective. Bhatti and Zaheer (2014) argue that companies' knowledge environments should promote innovative processes on basis of intellectual capital competencies which are constantly redefined in order to enhance performance. Kramar et al. (2011) has e.g. stated that even if theory supports the fact that human capital is vital for organizational performance, there is little empirical evidence. This work aims to add more knowledge to the research field by studying innovation as an outcome of intellectual capital, and identify what strategies the companies apply when innovating in relation to their resources and capabilities.

Hsu and Sabherwal (2012) performed a related study, where it was defined that "IC affects KM and dynamic capabilities; KM facilitates innovation but not dynamic capabilities or IC; a learning culture facilitates IC and innovation but not KM; firm performance depends on efficiency and innovation, but not directly on dynamic capabilities; and efficiency does not depend on any of the other constructs in the study.". In addition to this work, this study aims to contrast successful and less successful companies' practices and activities, and discriminate among them on basis of actual/attained profitability, as well as extending the details of causal paths among all variables through the outlined four disentangled intellectual capital elements specified in the Danish Guidelines of Intellectual Capital Reporting (DMSTI 2003).

Status Quo

Whereas the resource-based and the knowledge-based views withhold the tenet that innovation is profitable and necessary, they are generally not specifically addressing the innovative effects of intellectual capital, its disclosure and performance capacity based on knowledge diversity and uniqueness. Modern studies do not either directly asses the value of innovation and intangibles on firm performance. When this is done, it is mostly in the shape of e.g. patents or R&D expenses, which do not valuate the intangible knowledge stocks' effects in relation to the knowledge management's objectives. Therefore, the next chapter discusses the capacity of intellectual capital frameworks to asses value

to the practices of knowledge and result in innovation, dimensions which are all believed to be positive for business performance. Most importantly, an accounting perspective is adopted up next, since intellectual capital theory aims to improve both the strategizing and measurement techniques of knowledge-based management.

2.3 Valuation and Measurement of Intangibles

Edvinsson and Malone (1997, pp. 145-146) described "The Value Platform", which builds on the works of Saint-Onge, Armstrong, Petrash and Edvinsson, as a central theory which defines the process of corporate value creation through merging of the intellectual capital types and application of knowledge management. Value does not directly arise from either one of the capital types, only from their interaction. No matter how strong most of the capital types are, if one is misdirected or weak, no value can be created.

Edvinsson (1997) improved traditional accounting with Skandia's annual reporting based on intellectual capital statements, in addition to traditional annual reports. Skandia published their first intellectual capital report, "Value Creating Processes", in 1996. As one of the pioneers within the intellectual capital field, the author distinguished the management of knowledge from that of intellectual capital in such way that:

> *"The goal of knowledge management is to improve the company's value creation capability through the more effective use of knowledge. The goal of intellectual capital is to improve the company's value generating capabilities through identifying, capturing, leveraging and recycling intellectual capital. This includes both value creation and value extraction." (Edvinsson, 1997)*

Perhaps two of the most important concepts to separate are those of the entrepreneur having financial power over money and having power over customers and workers. These are two completely separate concepts. Schumpeter (2003 [á pub 1912], p. 99) stated that the position of a capitalistic leader in the economy cannot be derived from his/her power over money, but one can explain the sovereignty of the power as that exercised upon the subjects which intervene with the business process. Although not all of them can be directly economical-

ly rewarded, there are other “soft” benefits in the effects of successful businesses, which are soon followed up by supply.

Sveiby (2010) distinguished between four different types of intangible valuation methods:

- Direct Intellectual Capital Methods (DIC), which estimate the financial value of intangible assets by identifying its various components. Once these components are identified, they can be directly evaluated, either individually or as an aggregated coefficient.
- Market Capitalization Methods (MCM), which calculate the difference between a company's market capitalization and its stockholders' equity as the value of its intellectual capital or intangible assets.
- Return on Assets Methods (ROA), where average pre-tax earnings of a company for a period of time are divided by the average tangible assets of the company. The result is a company ROA that is then compared with its industry average. The difference is multiplied by the company's average tangible assets to calculate an average of the annual earnings from intangibles. Dividing the above average earnings by the company's average cost of capital or an interest rate, one can derive an estimate of the value of its intangible assets or intellectual capital.
- Scorecard Methods (SC), where various components of intangible assets or intellectual capital are identified and indicators and indices are generated and reported in scorecards or as graphs. SC methods are similar to DIC methods, except that no estimate is made of the financial value of the intangible assets. A composite index may or may not be produced.

Campisi and Costa (2008) found that components are either evaluated individually or as aggregated coefficients. In scorecard and direct intellectual capital methods, the single components of intellectual capital can be evaluated. The first method allows for the inclusion of non-monetary items (e.g. the Danish Guidelines, IC-index, Meritum Guidelines, Scandia Navigator and the Balanced Scorecard), whilst the latter applies monetary evaluation (the citation-weighted patents, human resource costing and accounting, Total Value Creation, the Value Explorer and Intellectual Asset Valuation). Evaluation of intellectual capital is also practiced at the aggregated level on basis of monetary principles, where the dominant approaches are market capitalization and return on assets methods.

The next sections discuss therefore the employed guiding framework of this study, the direct intellectual capital method described in the Danish Guidelines of Intellectual Capital Reporting, along with its characteristics and its potential of considering the "usefulness" of intellectual capital when valuing and describing firms' activities, resources and effects as an evaluation tool.

2.4 Intellectual Capital and Business Performance

Within many research studies, the linkage of innovation and intellectual capital to business performance is most often attributed to the efforts of strategizing and is specific to strategic context (St-Pierre and Audet, 2011), to their governmental, technological or regional/national context (García-Ayuso, 2003; Hervás-Oliver and Dalmau-Porta, 2007; Valladares Soler and Celestino, 2007) or industrial setting (Arthur, 1994; K. K. Reed et al., 2006). In agreement with these beliefs, the directive ability of strategy has been treated in this study in relation to knowledge measurements, with regard taken to the firms' industries.

Swart (2006) outlines in his review of intellectual capital research development three major views on the importance of intellectual capital, where the difference of the various definitions lies in the level of analysis applied, its temporal dimension and the qualitative nature of intellectual capital. Intellectual capital is either viewed as an individual level construct where the knowledge and skills lie within the individuals, or as a collective construct at firm level. The temporal lens differs within these views, where both current and future value is attributed to intellectual capital, but it is commonly regarded as a valuable, rare, inimitable and non-substitutable resource, in agreement with the resource-based view, cf. Barney (1991), Penrose (1995) and Peteraf (2005). Besides being strategized about, intellectual capital needs to be measured and accounted for.

2.4.1 Standardization of Intangibles

Investors and stakeholders require information about all relevant assets and resources which can improve firms' performance and future development (Lev et al., 2005). The New York Stock Exchange Commission (2010) specified in their report that the stockholders have the right to be reasonably informed by the corporate executives and board about the company's strategic goals and

plans, its risks and competitive position, as well as to disclose enough information to allow the management's performance to be measured against relevant criteria. Nevertheless, the obligation of corporate management is to create long-term value for its shareholders and avoid practices that involve excessive risks or which might benefit a company's stock price in the short-term, harming its long-term development. Likewise, communication with the shareholders should be open about success or failure in this regard.

Within the European Union, a number of initiatives have been taken to improve measurement and disclosure of information related to intellectual assets. The European Commission's MERITUM project, for example, was launched in 1998 with the objective to "*provide a consistent basis for the measurement and disclosure of information on intangibles, thus improving policy-making capabilities in the realm of science, technology and innovation*" (MERITUM, 2002). Other examples comprise the Intellectual Capital Accounts (Mouritsen et al., 2003), Balanced Scorecard (Kaplan and Norton, 1996; Kaplan and Norton, 2000; Kaplan and Norton, 2004) and the Skandia Value Scheme (Edvinsson and Malone, 1997; Edvinsson, 1997).

In the Meritum-project's (2002, pp. 7-8) justification, several reasons were outlined for the need of reporting intangibles:

- information systems do not allow for an efficient management of intangibles, which by remaining unidentified or exploited are vital losses within economic contexts
- the annual reports written in agreement with the GAAP (Generally Accepted Accounting Principles) do not draw efficient estimates of the future payoffs that can be expected from companies, nor assess the risk associated with them
- greater differences are becoming to be common between the market share values and the book values of firms, as the intangible resources must be expensed for immediately and generate value along time. When the book value and earnings are lower and the managers fail to indicate the future value generation of these investments through reporting, they are less attractive to the stakeholders
- lack of knowledge on a firm's intangible resources creates uncertainty over its future earnings, translating into excessive volatility of stock prices and association with a higher risk level, diminishing the firm's ability of obtaining funding for innovative projects

- insider trading issues, where undisclosed information only available to the managers might generate abnormal returns for the company without the awareness of the providers of capital not directly involved in management, as well as losses for the stakeholders
- if the financial analysts do not have sufficient information on the intangible determinants of firms, their earnings and growth estimates might be over-pessimistic or over-optimistic, leading to under-valuation or over-valuation of the firms. In the first case, hostile take-overs are facilitated and the firms' capabilities of raising capital is reduced, whilst in the latter case, this results in over-valuation of the share prices with consequences for their long-run investors, once the market adjusts the prices in the presence of the new information previously not disclosed.

The Meritum project (2002) further outlines three main phases of intellectual capital management in order for the disclosure practices to be successful:

- identification of intangibles in relation to the strategic objectives of the firm and the activities needed to develop their crucial intangible resources. This emerging network of intangibles provide an accurate picture of current critical intangible resources, those that need to be developed in the future and the activities related to objectives (pp. 14 - 16)
- measurement of critical intangibles once the intangibles have been identified and the causal network of relations has been established as proxy measures for each intangible, referred to as dynamic indicators. The indicators need to be comparable over time and across companies, reliable and trustworthy, objective and unaffected by bias arising from the parties involved, truthful and presenting the real situation of the firm with respect to the issue they refer to, verifiable in information content and authenticity, as well as feasible, i.e. that the indicators' information required for its computation can be obtained from the firm's management information system, or if the cost of modifying the systems to obtain the required information is lower than the benefits arising from the use of the indicator (pp. 17 - 19)
- taking actions related to the consolidation of the intangibles management system and its integration within the firm's management routines. This learning process affects both intangible resources and intangible activities, supporting processes which enable the transformation of measurement into actions, improving existing routines and interpretations. These activities focus on the supporting processes of recognition and measurement (human and customer surveys), reporting processes (internal reports

> to as many management levels as possible and investor relation information reports to analysts and other stakeholders), evaluation processes (single indicators and statistical analyzes of the indicators providing a view of the trend followed in previous periods), attention processes (status and trends, structured dialogues and work counseling meetings, internal benchmarking activities and connection of the indicators and measures to the salary bonus systems), as well as marketing processes (internal and external marketing activities revealing the intention and purpose of the production of measures and indicators) (pp. 20 - 22).

Given the variability in existing reporting practices, relating the "usefulness" of intangibles to their "exchange value" can be reasonably difficult, and as previously mentioned, often only studied through the internal or the external perspective. The next theoretical section deals therefore with common practices of managing and reporting in relation to existing performance and control systems with a focus on the capacity of successful management and competitive positioning through disclosure and internal measurements.

2.4.2 Disentanglement of Intellectual Capital

Lowe (2004) writes that accounting has been become more socially-oriented and expert-focused as organizations engage more and more in accounting technologies and the development and administration of knowledge objects. As a growth occurred in linkages between humans and knowledge objects, the theory body became more concerned with practices, inscriptions and representational techniques of knowledge as a critical strategic resource. A "performative approach" is characterized by practitioners as actors and emphasizes agency-related components of knowledge processes, where focus lies on how certain outcomes are negotiated and generated. Within actor-network-theory, little concern is given to context as an effect or outcome, rather than a cause. Actants are humans or non-human entities which achieve a form as a consequence of the relations in which they are located and the idea of performativity lies within the dynamics through which actants become defined through the performance of network relations. Science is a process of "heterogeneous engineering", where knowledge is not only emerging from scientific discoveries, but is fabricated by situated practices of knowledge production and reproduction, with a great focus placed on empirical inquiry. Knowledge is seen as a product or effect produced by a heterogeneous network consisting of human and other material elements,

where it also is a matter of organizing and ordering those materials. Accounting practices compress aspects of organizational reality and abbreviate information, usually in numeric terms, signs and figures, in order to bring spatially remote activities and operations close at hand and make them visible and manageable to management. Much of the accounting activity is produced on basis of information technology and software systems, which aid in increasing its standardization through reporting and surveillance of performance. In financial accounting, an organization is represented as a legal entity, whilst in management accounting, the representation of organizational aspects is mostly concerned with decision-making and the creation of the image of the organization rather than responding to an image that is created as a result of traders actions and market information releases. The monetary value of the management objects and the non-financial metrics need therefore to be developed and effectively managed in relation to time and space, where organizational performance is registered in real time and used in decision-making, as well as used to transmit a realistic picture on the market where the firm operates.

Bukh and Mouritsen (2005) argue that the resource allocations in a network are of first-order management rank, whilst through intellectual capital theory, second-order management can be attributed a purpose, orienting it towards effects rather than just knowledge accumulation by highlighting the knowledge functions of a network. The support and trust from the stakeholders can be increased when managers reflect over their incentives. Through knowledge dissemination and strategic context within networks of concern, the design of management is escalating towards the “performative approach” of doing research (Mouritsen, 2006). Distinguishment is hence made between the “ostensive approach”, which allows for certain understanding, and the “performative method”, which increases the depth of inquiry by raising additional questions of mobilization and connectivity within contexts of research. It is the strategic value of intellectual capital and the value offered to the users which are fundamental for successful knowledge-based value creation. This need to manage and account for intellectual capital has successfully increased since companies need to make their intangible management quality evident and cover the production of narratives, definitions of managerial challenges, initiatives taken in relation to these factors and the identification and management of identified key indicators.

Bukh and Mouritsen (2005) further state that by distinguishing between knowledge management and intellectual capital, translations can be made between knowledge and the production of wealth. In particular, as research evolved to the stage of second order knowledge management, the knowledge resources are controlled through economizing, organizing and modularizing knowledge. First order knowledge management comprises the mechanics of developing, distributing and interpreting information and knowledge. In the value creation process, attention shifted to the development of a constellation of knowledge resources as a network rather than on the development of knowledge in and of itself. Knowledge is therefore not productive as an object, only when it becomes part of a network of producers, users, mediators, gatekeepers and other business actors of organizational, technological, political and strategic type. It is not its pure existence which makes it profitable, but the interaction between different containers of knowledge. Once knowledge is taken out of its context, it becomes more difficult to understand. Containers of knowledge cannot exist separately; they must be strategically linked, developed and maintained, so that the perspective which allows the relationship between the different containers of knowledge does not alter the network's orientation. Intellectual capital as a second order knowledge management aspect provides knowledge with a purpose and orients it towards effects rather than just knowledge accumulation by highlighting the knowledge functions in a network. The interaction of a multitude of containers rather than just human resources makes knowledge powerful and enables it to be broadly disseminated. Management is responsible with sustaining the development focus on basis of value communication, knowledge sharing, making relevant information available and conducting corporate and personal development simultaneously. A central task is education and people must be managed so that they are properly aligned with the corporate objectives and development. Also, managers have to include employees outside of the organizational units and departments and relate them to clients and must hence act on behalf of the corporation. Relationships between employees and clients produce valuable insights and the relationships between employees create new knowledge. Besides this first order knowledge sharing between people, intellectual capital adds a second dimension on basis of a firm's resources by raising questions of how much should be invested in knowledge development and sharing (economizing), where knowledge should be located (organizing) and what knowledge should be used (modularity). By embodying knowledge in different containers such as key indicators, a more tangible grip can be had on

the otherwise fluctuating knowledge residing in human mind. Second, knowledge can be quantified, so that progress can be tracked along time in a decontextualized understanding, allowing for a generalized reading of the three main managerial concerns: resources, processes and results. On basis of intellectual capital statements, problematic areas can be directed on the right path, regardless of activity type – internal or external – to find how things can develop on basis of existing characteristics. By making knowledge manageable, the individual becomes less significant and importance is laid on the fit of knowledge in alignment with strategy, by making it productive in a network of concern.

Mouritsen (2003) argues that intellectual capital is embedded in organizations and is not visible on its own. It can be difficult to make distinct boundaries around intellectual capital, although the calculation of "new" intellectual assets is not different from the traditional financial ones. Instead, the difference lies within the fact that the institutions which make the calculations relevant are different. Intellectual capital is harder to appreciate and it is associated with an overflow since the "new" assets can move in different directions or get lost in the value-creation processes, being more loosely coupled to the host organizations than traditional assets. In order for disentangled "new" resources to be meaningful, recognized and relevant in their measurement context, they need the support of powerful institutions. The two elements of interest, entanglement and disentanglement, are described as important in increased institutionalization of intellectual capital in businesses. The first concept is related to the production function and business model of knowledge-creation, whilst the second one is related to accounting rules and standards. In the disentanglement process, "new" intellectual assets are identified and recognized as separable assets, whilst in the process of entanglement, it should be made visible how intangibles and intellectual resources work in practice.

When disentangling a resource of traditional or "new" type by taking it out of its context, its net present value will rarely be derivable from its market or booked financial value. For entangled assets, they must be relevant as a bundle since they cannot be disentangled individually. They often serve a collective purpose and exist in interactions (e.g. capabilities and competencies); therefore, they are inscribed partly via various batteries and indicators and partly via explicit recognition of the business model or narratives of achievements. By unfolding this development, the analyst can define the indicators' relevance when they can explain or support the path towards the proposed business goals. In or-

der for disentangled “new” resources to be meaningful, recognized and relevant in their measurement context, they need the support from powerful institutions. Entangled “new” resources are associated with the valuation-problem which is currently largely debated in scientific studies. The valuation of the individual asset might be nearly impossible when seeking to define its future financial value. Since entangled resources coexist and can be viewed as a bundle of assets, they must be understood in their particular setting rather than in accounting rules suggested elsewhere. They must be understood against their specific purpose, since they are entangled with not only assets, but with strategy and organizational visions, as they develop and create value over time. (ibid, 2003)

It can be argued that the capitals are overlapping and that they can be difficult to separate. Schumpeter (2003 [á pub 1912], pp. 105-107) adequately referred to the separability of one and the same individual who is active in different areas, as a question of distinguishing the abstraction “while everyone is an economic agent, nobody is solely an economic agent”. The description of an individual state of the economy consists mainly in the image of the situation and of the behavior of people in the economic area. Each of these areas stand in a particular point of time under the forming influence of data, which are analogous to those which determine an economy at any point in time. In static economic theory, this meant the understanding of human affairs, which today are considered “common knowledge” and “common place”. At any given point in time we can look at any side of social life as scientifically being the result of given data. The setting consists of people who belong to the economic profession in the essential sense and people whose profession is economic activity, such as workers and merchants. Therefore, when separating concepts, it is to keep in mind that one and the same individual can be active in different areas and that while one traces the activities of a person in one area, it can be shown that a person is active in another area, too.

2.4.3 The Selected Intellectual Capital Model

Nielsen et al. (2006) have previously applied the employed model in an analysis of intellectual capital reports and IPO reports, in order to suggest and illustrate how new rules for the analysis of intellectual capital statements can be developed. The authors argue that the same three main questions which can be

answered with the help of traditional annual reports and financial statements can also be answered with intellectual capital reports:

Intellectual Capital Statements	Financial Statements
What do the company's knowledge resources comprise?	What are the company's assets and liabilities?
What has the company done to strengthen its knowledge resources?	What has the company invested?
What are the effects of the company's knowledge work?	What is the company's return on investment?

Table 2.4.3 Central Questions when Interpreting Intellectual/Financial Statements

The assessment criteria for the analysis model are based on indicators attached to the three main questions of the analysis, as described below:

- Resource indicators concern the company's knowledge resources, i.e. the company's stock and composition of resources within the areas of employees, customers, processes and technologies. They answer questions such as "how many?" and "which share?" and illustrate how big, how varied, how complex and how correlated the knowledge resources are. The attached management actions are portfolio decisions, of how many knowledge resources of the different types the company wants.
- Activity indicators describe the company's activities to upgrade its knowledge resources, i.e. activities initiated to upgrade, strengthen or develop its resource portfolio. The indicators answer the question "What is being done?", e.g. what does the company do to develop and improve its knowledge resources – through, e.g. continuing education, investments in processes, activities to educate or attract customers, presentations etc. The attached management actions are thus upgrading activities.
- Effect indicators reflect the consequences or the total effects of the company's development and use of knowledge resources. As accounting system, the model only shows the effects; it does not seek to explain from where they arise. The analyst on the basis of, but not within the model itself may seek such explanations.

[Definitions from Nielsen et al., 2006]

The Intellectual Capital Statement Model presented in Figure 2.4.3a indicates the main components of an intellectual capital statement report, where the

structure consists of the knowledge narrative, which in turn should indicate the relevant management challenges, initiatives and the applied indicators.

Figure 2.4.3a The Intellectual Capital Statement Model (Mouritsen et al., 2003)

Mouritsen et al. (2003) furthermore proposed a firm evaluation tool which contains the knowledge resources of interest (human capital, relational capital, processes and technologies) on the vertical axis and evaluation criteria on the horizontal axis (effects, activity and resources), cf. Figure 2.4.3b:

Evaluation Criteria / Knowledge Resources	EFFECTS What happens	ACTIVITIES What is done	RESOURCES What is created
EMPLOYEES	• • •	• • •	• • •
CUSTOMERS	• • •	• • •	• • •
PROCESSES	• • •	• • •	• • •
TECHNOLOGIES	• • •	• • •	• • •

Figure 2.4.3b "The Analysis Model as An Accounting System" (Mouritsen et al., 2003)

As an accounting system, this model is not an input/output model, but the classification of the knowledge resources and their activities and effects can be used in an empirical framework to analyze the effects of intangibles in relation to corporate output together with other factors of interest. In this framework, there is a strong focus on improving decision-making on basis of strategy, resources and process, to improve disclosure of intangible assets and focus on processes and technologies in order to describe the existing and anticipated value-generating abilities better.

2.5 Propositions of Theoretical Development

Intellectual capital was first discussed in relation to the resource- and knowledge-based views on one hand (i.e. the *strategic stream*) and as performance management systems and reporting practices on the other (i.e. the *measurement stream*), before deepening into the emerging issues of firm valuation and accounting for created value.

In the literature review, relevant theories were combined in order to relate strategy, management and disclosure to the market value of the companies in an inter-disciplinary research design, cf. Table 2. As such, the main research aim was operationalized on theoretical basis. This step allowed for insights within state-of-the-art research and theories, leading to increased understanding of the disentangled intangible resources in relation to what i. a. Mouritsen (2003) specified as the largely debated problem of firm valuation on the market: the entanglement of new resources in relation to market value.

Hence, a complete study should address the strategic internal management and its relationship to disclosure (if identifiable empirically) and its measurement in terms of financial effects through disentangled entities. Of interest are, as stated before, not to primarily quantify or monetize knowledge, but to:

- understand and capture the causal process of knowledge transformation (new initiative)
- analyze its transparency externally towards stakeholders and investors in relation to knowledge management (new initiative).

Thus, the discussed theories and recommendations of practice treated the internal issues associated with innovation and intellectual capital management effects on market value, while the second research objective treated the external reflection of these internal practices in disclosure, cf. Section 1. It is herein argued that it is necessary to have both areas under analysis when determining value and efficiency in market valuation of companies[6] and seeking to improve profitability and efficiency based on knowledge management. As the research questions suggest, this discrepancy is partially attributable to the existing differences between internal performance management and the public disclosure

6 When the market-to-book ratio is equal to unity, the market volatility of stock prices can be considered to be reliably explained through accounting and the tensions between performance management and the market value of the firms can be reasonably neglected as biases of management control systems.

of the companies, at the same time as the novelty and special requirements associated with intellectual capital might cause that only certain intangible types are externally accounted for or managed. Nevertheless, the most common strategic management theories recommend the use of knowledge and capabilities in successful innovation, but their prescriptions are somewhat limited in relation to the measurement practices and reporting practices do therefore not reflect the progress of innovation-based activities and resources straightforwardly (Smith, 2005; K. K. Reed et al., 2006).

By linking the strategic and the measurement streams, analyses can be performed to identify which investments are profitable and transparent enough. This study proposed therefore an analysis on basis of the recommendations of a direct intellectual capital method, more exactly of the Danish Guidelines of Intellectual Capital (2003) reporting in relation to profitability (abnormal returns compared to competitors from the same industry) and disclosure practices.

The theoretical areas which can benefit from further analyzes as suggested in the current study bring contributions within to following existing issues:

- the strategic context of doing business in relation to intellectual capital performativity, where the literature is too generalized and offers no propositions of separating the management objects from their effects, neither of their measurement
- the architectures that firms use to create future value based on made intangible investments and applied strategy, as separable and modular aspects which can have diverse configurations based on firm diversity and asymmetrical information
- the dynamism of individual intellectual capitals in relation to disclosure practices, with a focus on the strong positioning of narratives since they explain additional incentives and investments which generate future value for a company, its customers and its stakeholders
- the entangled intellectual capital effects' on abnormal returns, where it should be made possible to separate the individual objects and their effects on basis of disclosed information
- the disentangled intellectual capital types and their internal causality, where more insight can be obtained in the management of intangibles by classifying them into resources, activities and effects.

2.5.1 Identified Research Gaps

Three gaps were identified during the course of the theoretical analysis, which support the research frame described in Figure 1. These research gaps are next summarized in relation to the included theories. In order to analyze corporate sustainability, it is herein argued that the suggested solutions are important aspects within the research field and that they need further analyzing and testing on empirical support in order to bring new knowledge into the research topic, on empirical grounds. The three objects under study, knowledge management, disclosure, their financial effects and their interrelations have not been analyzed before in intellectual capital research in an over-viewing research frame.

Murthy and Mouritsen (2011b) argue that when the intellectual capital resources are disentangled, the causality between the intellectual capital elements is often not taken into account and that this might directly affect a firm's performance. The causality of the disentangled intellectual capital resources, related activities and their effects are therefore herein treated as separate concepts in their own rights. Different causality paths are suggested to be analyzed as described in the Danish Intellectual Capital Reporting Guidelines (2003), namely as human capital, relational capital, process capital and technological capital and tested for correspondence in relation to strategic factors of interest. The disassembling of the strategic context of doing business in relation to intellectual capital performativity is useful to derive new findings where the management literature is too generalized and offers no propositions of separating the management objects from their effects. Nonetheless, few studies distinguish between intellectual capital management objects as resources, activities and their effects in relation to practices of disclosure, cf. Mouritsen et al. (2003). Furthermore, different resource architectures that firms use to create future value are seldom captured as separable and modular and diverse configurations can have different effects based on knowledge diversity and asymmetrical information.

The dynamism within the individual intellectual capitals is of importance in relation to disclosure, just as the entangled and disentangled intellectual capital effects' on abnormal returns. The knowledge management objects and their effects should be separated as the strategy-related issue implies. Modularity becomes hence an important concept in this study, since the strategic management literature does not treat the arrow from intellectual capital's internal causality to disclosure and further to firm value.

Innovation, an effect of intellectual capital management practices, is also poorly explored in relation to disclosure and to firm value. By relating these practices to the practices of disclosure, it can be identified how successful companies manage their resources internally and whether these traits also are observable in their external disclosure.

Management Profiles

Based on the collected information and research question, different companies with different levels of profitability are expected to have different management behavioral profiles. Since the main tool of analysis is an intellectual capital-based model, differences in management capability can be explained through utility theory, where different manager types are differently profitable, based on e.g. anticipated differences in strategies, knowledge management or awareness of the business surroundings. Utility theory supports three main types of managers: risk-avert, risk-neutral and risk-seeking, who seek projects with different risks, where risk is defined as diminishing marginal utility of money (Salvatore, 2012). Managers who are risk-seeking often make bigger profits, but take on riskier investments. Risk-neutral managers are indifferent to risk, meaning that there is a balance between their risk and returns, whereas risk-avert managers are the most common and take a much closer look at risk when investing. “Managerial profiles” will be developed in order to identify differing levels of efficiency among the participating companies, before inquiring within their differences in their internal management and in their reporting towards the public.

The participating companies of this study will be divided in classes with differing traits through an analysis of their actual realization on the market vs. their perceptions of profitability. In this way, the two analysis parts, internal and external, can be triangulated without conceptual bias, to form a research umbrella of the topics of interest.

Proposition 1: Knowledge Management --> Disclosure --> Financial Effects

Research Question 1: How do firms attain higher financial effects through an effective internal management of intellectual capital and innovation, in relation to reporting?

Identified Issue: Intellectual capital resources and activities are not always optimized in relation to corporate reporting, when considering their intrinsic causal paths as disentangled knowledge objects, or their measurement.

The phases when knowledge is substituted by intellectual capital, and activities turn these intangible resources into value streams to result in innovation are under-researched areas as well. The theoretical support expressed in the process of creating physical intangible assets that underpin capabilities can nevertheless be poorly measurable (Smith, 2005, p. 151).

Theoretical Solution: This analysis part deals with the strategic stream of intellectual capital, especially the resource-based framework, where the core tents of uniqueness, rarity and inimitability of resources and competences are evaluated in relation to strategizing practices (Penrose, 1995; Grant, 1996; Hoskisson et al., 1999; Gottschalk, 2005). While a strong connection is made between strategizing and the management of intangible resources and activities, these theories do not actually prescribe best practices and optimization recommendations based on actual measurements, as intellectual capital theory does. By placing this strategizing aspect of intellectual capital in the total concept and by emphasizing different reasons of differentiation, new competitive insights can be obtained, with the support of actual measurements. Hence, the strategic and measurement streams are combined in diverse classes, to better understand diverse management architectures and their efficiency in relation to reporting abilities.

Suggested Analytic Scope: To study the intellectual capital management focus of the participating companies, as disentangled and causal knowledge resources and activities, based on actual measurement efficiency. This analysis of primary data aims to result in different “managerial profiles” based on the actual financial realizations of the companies. The newness lies within the traits of the formulated profiles, as they describe identified causal patterns of the successful

firms and allow for identifying the difference between profitable and less profitable companies' internal knowledge management, as resource constellations. Second, strategy can be studied in relation to intellectual capital, innovation and disclosure across the management profiles.

Proposition 2: Knowledge Management --> Financial Effects

Research Question 2: Are there any benefits from asymmetrical information or innovation type given intellectual capital's assumed idiosyncrasy?

Identified Issue: Differences exist in competitive advantages due to variation in knowledge peaks, as well as asymmetrical information among firms on the market, rendering actors differently informed about themselves and their surroundings.

Theoretical Solution: The effects of intangible knowledge peaks (open or secret innovation) and asymmetrical information (internally-developed or leased/acquired innovations) need to be evaluated in relation to their profitability and competitive positioning on the market among differently informed actors.

Suggested Analytic Scope: Intellectual capital literature does not distinguish if innovation type (open or secret) has any relation to profitability in relation to benefits of asymmetrical information. The management of intangibles should therefore be directly tested in relation to their impact on financial profitability. The “managerial profiles” will again be employed to identify differences in innovation and information management between managers at different profitability levels.

Proposition 3: Disclosure --> Financial Effects

Research Question 3: Does disclosure offer an accurate representation of that which is organized, or is such information conditioned and in which way?

Identified Issue: Tensions arise in the translation of financial and non-financial investments in public disclosure, making it rather difficult to trace their effects and raising questions of transparency in relation to reporting practices.

Theoretical Solution: The discrepancy between the market and book values of firms is a heavily-researched area, where the benefits of qualitative reporting and disclosure of intangible and non-financial assets are encouraged. By applying the classification structure and the evaluation model described in the Danish Guidelines of Intellectual Capital Reporting (2003), individual intangible classes can be related to profitability. New knowledge can be developed within this area by questioning the universality of accounting and disclosure based on priorities in internal management. As previously discussed, knowledge management is the basis of intellectual capital theory. In extension to previous theory, this study allows for analyzing how accurately disclosure reflects strategy, intellectual capital and innovation in financial realizations.

Suggested Analytic Scope: This analysis aims to reveal issues of reflecting the effects of internal knowledge management and investment ambitions externally. It is of interest to determine if external information is a good representation of internal processes and what shortages consist of. By applying the same classification of “managerial profiles” as in the previous analyses on the secondary data as well, it can be estimated if uniqueness through reporting is profitable and if it can be observed in financial outcome on basis of disclosure practices.

Chapter 3 – Research Design and Methodology

The different research methodologies, constructions and tools applied are described in this chapter to formulate the research elaboration process. The proposed empirical model is inspired by the employed intellectual capital model and by the assumptions of the included theories. The diverse analysis methods are introduced thereafter, followed by reliability concerns. The data collection process is described next. A survey instrument is designed to collect primary data, which will be analyzed in relation to collected secondary data, consisting of annual reports. A mixed research design is proposed, where both qualitative and quantitative approaches are employed with a strong focus on causality and underlying structures among the capitals. The suggested analysis path deals primarily with visualizing, measuring, linking and synthesizing all individual and aggregated knowledge-based inputs to the outputs under different conditions: strategic objectives of the firm, intellectual capital profile, practices of innovation, disclosure and industry. The proposed research is mainly exploratory, yet also in great part confirmatory. The approach is step-based, and the raised research issues are evaluated in a systematic and controlled setting.

3 Research Approach

The identified issues of interest (cf. Section 2.5) are next translated into an empirical model with regard to the stated research questions (cf. Section 1).

3.1 Methodological Orientation

This study is not an effort to identify a direct or fixed relation between the practices of firms, their disclosure and their knowledge management. Instead, the aim is to synthesize and analyze the knowledge-based operations management activities and objectives of the participating managers and companies' external and internal disclosure, especially on empirical basis. This allows for synthesizing the idiosyncrasy of the collected actions, practices and objectives. The analyses in this study aim to indicate utility of knowledge and intellectual capital and its associated strategy and disclosure, through actual measurements. Hence, the organizational design, its management and knowledge stocks will be analyzed for risk and uncertainty in relation to profits. Previous research approaches are next consulted in order to adopt successful methods to later be implemented into the empirical analysis.

3.1.1 Defining the Research Model

To answer the research questions and account for the identified research gaps, the Intellectual Capital model will be applied on the practices of Scandinavian and U.S.-based companies. They have been selected for this study since they are supposed to be efficient and their accounting systems are well-developed in intellectual capital terms[7]. The participating companies are publicly listed and are still untapped ground in terms of qualitative reporting based on the employed research model, which emanates from Denmark. Findings can therefore be valuable for all stakeholders, as well as for the theory and practices of intangible management, innovation and strategizing in the area of corporate valuation based on intellectual capital.

Given the outlined expectations, a visit was made to the external advisor of this study, professor Brett Trueman at UCLA (2014), to discuss his point of view on the universality of the methodology of this study. In his opinion, differences between accounting practices were to expect, where U.S. practices have a higher tendency to quantify items. Yet, the suggested methodological approach of this study should definitely account for such bias if existing and lead to com-

7 Edvinsson and Lin (2011, p. 22) found in their international study of intellectual capital development that ”with respect to 14 years of data, the top ten countries in the overall ranking list are, in order, Finland, Sweden, Switzerland, Denmark, the USA, Singapore, Iceland (2007 and 2008 data are missing, very likely due to the 2008 financial crisis), the Netherlands, Norway and Canada”.

monalities in profitability drivers irrespective of country of operation if similarities exist in the management mode.

By recording intellectual capital and management aspirations as measures based on ranked occurrence frequency in both external reporting and the questionnaire, this study creates and applies an accurate research setting and tool. Being primarily based on ranking, practices from different areas and with different management capabilities can be evaluated accurately[8] while studying common traits. The location of the companies is registered as a dummy variable (identification label) and is not primary in interest, because the majority of the participating companies do not practice disclosure in agreement with the Danish Guidelines of Intellectual Capital Reporting. The proposed research tool is an autonomous model serving as structural mechanism for revealing underlying causal patterns and differences in ranking. In order to make differences measurable across both geographical areas and different levels of profitability on the market, fuzzy/latent logic[9] is applied to create a profiling tool. This latent class analysis allows for classifying the participating companies' practices into relevant groups based on commonalities and differences in actions and financial realizations, and result in the intended "managerial profiles" of this study.

A mixed methodology is proposed, where step-wise informed choices are made on basis of an overall analytical logic consisting of two steps:

> a) measure the correspondence of the employed theoretical and operational intellectual capital model on real-life practices and realizations (empirical model) on two types of data (primary: questionnaire; secondary: annual reports)

8 Wang (2013) recommends that subsets of an empirical analysis logic should be compared and contrasted in relative rather than absolute terms due to the fact that the amount of evidence has no set upper bound. The floor and top values of the study-specific data should and will therefore frame the limits of the evidence interval, based on its registered value and identified characteristics.

9 Due to the rather small number of participating companies, it is not possible to analyze the data with the Structural Equation Modeling technique. Latent Class Analysis is suggested instead and applied to classify the "managerial profiles". Its use is common in natural sciences, where discrimination needs to be made between a heterogeneous pool of subjects based on enforceable conditions. The analysis method per se will be elaborated upon later in this chapter.

b) an additional linking step, which estimates the correspondence of the two structures of data against each other (linkage through ranking and agreement/disagreement).

The two main inspirational models of the current study's overall logic were presented in Figures 2.4.3a and 2.4.3b. They are herein used in the creation of an adapted overall analytical logic model, illustrated in Figure 3.1.1.

This structural research model aims to capture existing concepts of interest on basis of indicators (represented by dots) and to classify them according to the seven categories on the left-hand side ("strategy", "R&D", "employees", "customers", "processes", "technologies" and "disclosure"), as well as cross-tabulate them with the horizontal evaluation criteria ("resources", "activities" and "effects") to form complete "managerial profiles" at different levels of profitability. The "goals and objectives", "challenges" and "initiatives" areas described in Figure 2.4.3a are included to structure the secondary data in greater detail when linking it to the primary data, besides overlapping on parameters of interest ("strategy", "innovation", "intellectual capital" and "disclosure"). In addition, the two dimensions of "R&D" and "strategy", previously applied in e.g. Bukh et al. (2005) and Mouritsen et al. (2001), are contended in the analytical framework to ensure complete coverage of the topics of interest by accounting for the "knowledge narrative" part of Figure 2.4.3a.

Goals and Objectives	Challenges	Initiatives

Evaluation Criteria / Knowledge Resources	Resources Management Objects	Activities Investments	Effects Achievements
Strategy	⋮	⋮	⋮
R&D	⋮	⋮	⋮
Employees	⋮	⋮	⋮
Customers	⋮	⋮	⋮
Processes	⋮	⋮	⋮
Technologies	⋮	⋮	⋮
Disclosure	⋮	⋮	⋮

Figure 3.1.1 The Overall Analytical Logic

The analytical model is applied as an accounting system, as described in the Danish Intellectual Capital Reporting Guidelines (MERITUM, 2002; Mourit-

sen et al., 2003), cf. Figure 2.4.3b. Herein, the managerial resources are structured in terms of "resources", "activities" and "effects" which describe the transformation of intangible assets within the management systems. The scope of this dimension is to specifically target and measure causality between the elements. Nevertheless, the tailored own-developed category of "disclosure" was developed in order to capture the existing interest of making the reporting activity explicit to stakeholders.

This research study is thus an autonomous effort of observing and locating discrepancies and commonalities, which through the independent theoretical lens aid in understanding how a fair international valuation of corporations can be made increasingly possible. By shedding light on the underlying management practices, managerial type and attained financial outcome in relation to competitors from the same industry are translated into successful and less successful "managerial profiles".

3.1.2 Defining the Empirical Measurement Model

Rodgers (2007) writes that when measuring and understanding knowledge-based information systems and productivity, three important aspects are a) criterion validity (the establishment of a statistical relationship with a particular variable), b) content validity (the representation of a specified universe of contents) and c) construct validity (the measurement of the phenomenon under study). These validity criteria can be applied to knowledge-based assets that:

- can be owned and sold, e.g. intellectual property, contracts and business agreements, licenses and franchise rights, quotas and resource allocations (airport landing or water rights) and employment contracts; this is a category often of concern for the "criterion validity"
- can be controlled but not separated out and sold, e.g. areas property to a specific company which are difficult to separate out from the continuous operations, such as business secrets, in-process R&D and business processes; this knowledge-based asset class is often the concern of the "content validity" criterion
- might not be completely owned by the firm, e.g. human capital, core competences, organizational image, capital and relationships; where "construct validity" is often concerned with this type of assets.

The proposed model incorporates the strategic and measurement streams of intellectual capital with a focus on the use and exchange value of information, innovation and practices of disclosure. The theoretical focus is inter-disciplinary between strategic management, intellectual capital, accounting and finance.

The mathematical expression of the knowledge-based production function is:

$$Firm\ Value_i = f(Strategy_i, Human\ Capital_i, Relational\ Capital_i, Process\ Capital_i, Technologies_i, Innovation_i, Disclosure_i, Performance_i) \quad \textit{(Equation 1).}$$

where i, i<=3, represents managerial profile$_i$ based on abnormal returns level (high, medium or low).

This knowledge-based production function comprises hence the effects of strategy, intangibles, innovation, disclosure and performance as determinants of the attainable firm value and the exchange value of intangible investments. This formula will be applied for a) hypothesis testing on internal management and b) structuring and linking secondary annual report data, on basis of formulated rankings of registered primary and secondary values and abnormal returns in relation to competitors from the same industry.

A common factor between both the Danish Guidelines of Intellectual Capital Reporting and the American Institute's CPA's Enhanced Business Reporting Framework is the creation of measurable performance metrics, which can be related to corporate financial value. Irrespective of the type of metrics and key performance indicators used, their purpose is to offer a measure of the respective inputs in the creation of value. The fact that strategic management theory does not clinically distinguish between strategy and its internal effects can hence be studied through the disentanglement of knowledge capital types in relation to the practices of innovation, by focusing on resources employed, activities engaged in and their effects in terms of innovation as outlined above. Hence, the suggested model aims to capture the internal conflicts between calculations of knowledge, as well as the causal structure in the knowledge processes, at different levels of profitability. External competencies are represented through disclosure practices, where strategy is either directing the outcome efficiently or not through reporting activities and indicators.

3.1.3 Model Modularity and Hypothetical Objectives

The empirical model can be decomposed into minor parts, to study the specific issues raised in the end of the literature study closer and verify how the expected causality applies in the overall setting. The diverse links of the model can hence serve in analyzing specific investments and their individual effects on firm value, in agreement with the stated research questions.

3.1.3.1 Confirmatory Objectives, Causality and Generality within the Primary Data

The proposed empirical model presents the variables and their relationships, cf. Figure 3.1.3.1. The model has several latent causality "paths" indicated, which are theoretically-supported in great part or developed on basis of previous research findings and indications and which serve to illustrate the expected connection among the latent factors of interest: strategy, intellectual capital, its output innovation, disclosure and performance, and the market value of firms. Appendix 1 indicates several references of the inspirational theories by the respective survey questions[10].

While many studies acknowledge the interaction of the intellectual capital elements in the formation of the notion "intellectual capital", not many studies address its internal causal processes. Meritum (2002) and the Danish Guidelines of Intellectual Capital Reporting (2003) offer guidance in this matter, along with the included theory of intellectual capital. The main arguments of the selected "causal paths" have been previously described in Sections 3.1.1 and 3.1.2.

Grimaldi et al. (2015) have in their analysis of intellectual capital value developed an index which allows for defining causality among the intellectual capital elements. Montemari and Nielsen (2013) specify that causal mapping might be useful in management decision. Whereas causality can be associated with a great level of "positivism", it is absolutely not the reason why it was included in this study. The empirical modeling applied in this study is not positivist in

10 The survey questions were designed to capture the effects of both the theoretical aspects and to be in agreement with the specified latent structure, based on the recommendations of the Danish Guidelines of Intellectual Capital Reporting. The survey is discussed in detail in Section 3.2.1 and Appendix 1.

nature, as it contains soft data and indices and non-linear statistical profiling methods. The main reason of its adoption is that while interaction among the intellectual capitals is commonly acknowledged within the research field, little is yet known about how the studied elements interact causally, nonetheless verified empirically.

These assumptions are yet implemented with caution and with associated remarks. Causality in this study is implemented in the formulation of the questions of the survey (cf. Appendix 1), as indicated in the paths of the empirical model (cf. Figure 3.1.3.1). The questions' formulation (where adequate) consists of two parts: a) introduction to the concept under study and b) linkage to any effect of interest within the corporate practices. This method has been applied in the scope of directing the respondents' attention and increasing reply specificity towards the issue under study, to eliminate bias and diminish unfamiliarity with the topic under study.

An applied example is for the perceived innovation variable in relation to disclosure:

> a) “We systematically develop new ideas and knowledge”
>
> b) “... and this makes us report our innovations externally instead of innovating in secrecy”.

This specific question aims to define the effects of practiced innovation (control variable of type “action”, if present in the company otherwise marked as “1”). If previous activity has been defined as an occurring practice, i.e. > “1”, then the effect (part b can be considered valid and relevant). In this case, the question seeks to answer if the companies disclose their innovations or innovate in secrecy, a fact which is of importance to managerial knowledge and insight within actual practices of innovation.

Hedström and Ylikoski (2010) state that even when an explanadum mechanism-based insight if offered within a topic, the knowledge that there is a mechanism through which x affects y is a certain support of causality. However, since this study is topic- and empirics- specific, it should also be viewed as a guideline applicable to the encountered settings. Hence, for the findings to be considered as optimizing for the topic under study, more evidence needs to be added along time. Therefore, by acknowledging universality limitations in the study, one can focus on what is revealed as findings and most importantly in

this case, consider them as one case of evidence that the employed analytical model and theoretical support could be identified in. Second, every respondent's reply to the survey question is subjective and based on their own opinions and experience within the company. The experience level of the respondents is above a mean of 9.38 years, with the lowest value of 1 year (3 respondents) and the highest values of (40 - 45 years, 3 respondents). It is hence reasonable to assume that the subjects have acceptable insight within the represented company's practices and refer to their own view in their context of operation and not to a generalized opinion about the question posed. The structure of the questionnaire per se seeks to eliminate variation within the question topics, yet it is the pure observation variability of the subjects that is of importance to study in order to form examples of appliance and articulate existing opportunities. The results aim to increase the understanding of how things worked for some of the subjects included in the study, and how they might and should work for other ones under similar circumstances.

The empirical model serves as the main tool of analyzing the questionnaire. Its structure incorporates issues of interest into logical sub-models, mainly supported by the included theories. In order to claim correspondence, the empirics should heavily correspond with the theoretical tenets.

Strategy is linked to practices of innovation and disclosure through the proposed direct intellectual capital method adapted from Mouritsen et al. (2003), cf. Figure 2.4.3a. The model distinguishes between market capitalization and performance measurement and links the disentangled intangible types to firm value by incorporating the evaluation criteria: resources, activities and effects. Its other causal aptitude consists of the individually outlined and theoretically supported causal “paths” between the individual intellectual capital elements. This specific improvement offers the advantage of analyzing the representation of knowledge-based value creation in strategic management literature empirically, because effects and knowledge activities are conflated with the used resources and poor, if any, empirical support exists.

Second, the empirical model is modular. Diverse parts can be evaluated separately or jointly to derive specific or over-viewing knowledge. This second attribute is also developed to add a quality of causality to the analysis, achieved on basis of the tailored formulation of the survey questions.

The third regard taken to inter-causality is the model's theoretical foundation. The overall “path” follows the theoretical belief outlined throughout the literature review performed in Chapter 2, where strategy directs the management of intellectual capital, innovation and disclosure practices through creative and performance-oriented competence-building processes, towards higher market values and sustainable competitive advantages. This causality pattern builds on recommendations from the Danish Guidelines of Intellectual Capital Reporting (2003), where human capital impacts on customers, processes and disclosure, relational/customer capital contributes to internal improvement of processes and technologies support the transformation of capitals. Yet, this area has poor measurement support in actual empirical studies and none have yet linked all included areas together in one and the same research frame.

By testing the outlined theoretically-supported “paths” in empirical analyses, it can be determined whether the theoretical expectations are supported or not and how resource constellations and architectures vary with performance and profitability. Because the respondent companies do not practice the Danish Intellectual Capital Reporting standard, the information they have disclosed is unbiased and the correspondence of the logic of the model (the theoretical tenets) can be verified reliably on basis of the collected empirics.

The corresponding hypotheses (cf. Table 3.1.3.1) are expected to have positive effects on abnormal returns in relation to competitors from the same industry.

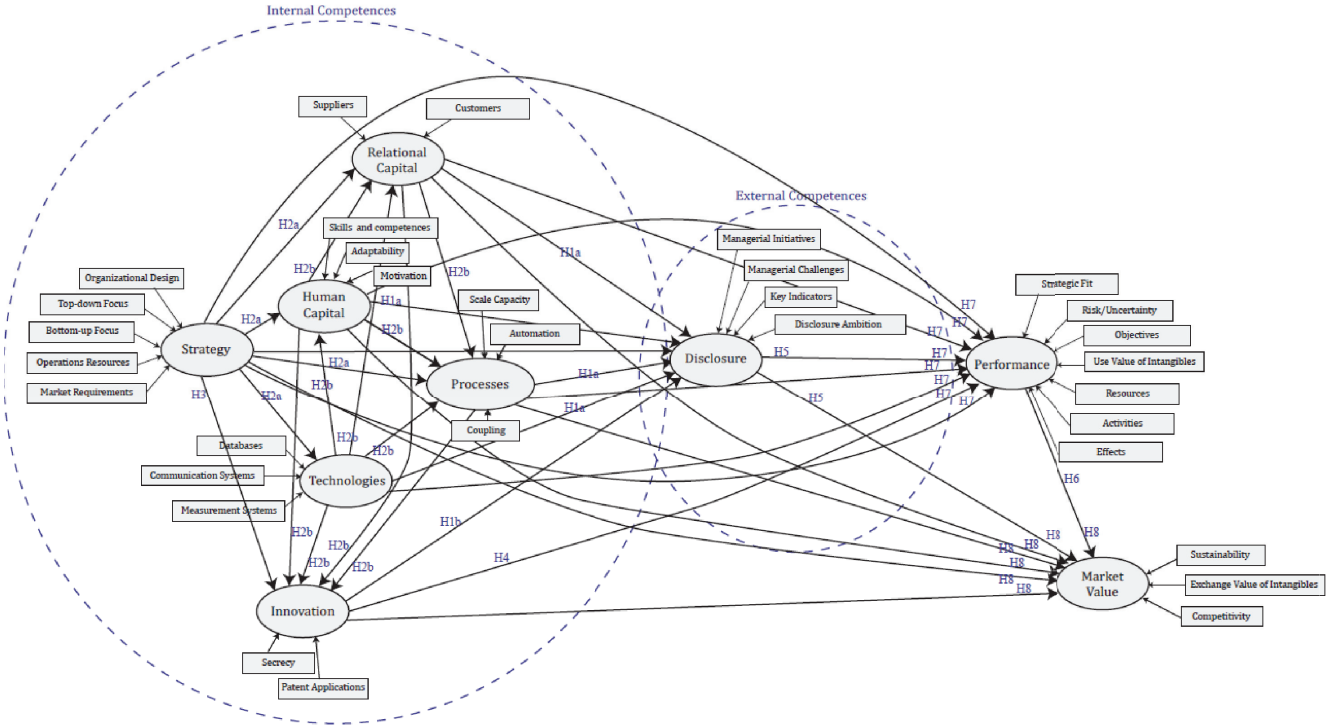


Figure 3.1.3.1 The Empirical Model (Primary Data Analysis – Internal Knowledge Management)

The hypotheses to be tested are illustrated throughout the paths of the model are next presented below:

Confirmatory Hypotheses
H1a. Investments in human, relational, process and technological capitals affect the practices of disclosure positively. Relational and human capitals represent the intangible activities which the firm engages in, technologies are resources which support the other activities, whilst processes are optimizing effects.
H1b. The practices of innovation affect the reporting practices of a company, where the control, reporting and production systems play an important role in the attainable effects and their measurement.
H2a. A company's strategic focus is believed to affect its intellectual capital management, as well as its capacity of translating knowledge into intangible resources, activities and effects.
H2b. The indications made in the Danish Guidelines of Intellectual Capital Reporting are herein applied as follows to test the internal causal relations between the individual disentangled intellectual capital types: 1. human capital activities affect the relational capital positively 2. human capital activities affect processes positively 3. human capital activities positively affect the innovating results of a company 4. relational capital activities affect processes positively 5. relational capital activities affect the innovation ability positively 6. process capital activities affect the corporate innovation positively 7. technological resources such as IT systems and hardware affect the human capital and relational capital activities positively, as well as the processes and innovation ability of a company since they support more efficient and structured operations, control systems, information management and documentation ability 8. investments in human, relational, process and technological capitals affect the existing degree of innovation positively
H3. Good decision-making practices directed towards innovation increase the chances of success.
H4. The innovating capacity of a company has positive effects on its performance. This hypothesis supports the modern intellectual capital theory, where the strategizing stream of intellectual capital is profitable for business and where competitive advantages can be obtained on basis of asymmetrical information, knowledge management and intangible investments in R&D and process development.
H5. High disclosure efforts make it easier to reflect managerial initiatives, challenges and internal management adequately. The shareholders, investors and analysts are provided with detailed information, which explain the company's market value and future intentions better.
H6. The performance of a company is positively affected by investments in all specified inputs.
H7. The market value of a company is positively affected by investments in all outlined inputs.

Table 3.1.3.1 Confirmatory Hypotheses

It is important to mention in this context that the empirical model is not a Structural Equations Model. Unfortunately, the amount of respondents does not allow for this type of analysis. However, a flexible and behavioral-based analysis

type based on latent probability classification is introduced as alternative in Section 3.3.1, “Latent Class Analysis”.

3.2 Data Collection and Variable Development

The data of interest are both primary and secondary in nature. The primary data collection details, respondents of interest and formulation of the questionnaire are discussed in Section 3.2.1. The secondary data collection is presented in Section 3.2.2 for annual reports and Section 3.2.3 for the financial data.

3.2.1 Primary Data: Questionnaire

The constructed survey consists of all the variables of interest discussed in the theoretical Chapter 2, i.e. strategy, intellectual capital, innovation, disclosure, performance and profitability. These translate from the structural model described in Figure 3.1.1 into the empirical model described in Figure 3.1.3.1. In the survey, attention was accorded to the causal structure between the variables, discussed in more detail in section 3.1.3.1. At the same time, the questionnaire distinguishes between activities related to the studied variables, as well as their effects, measured through causal linkages.

A web-based interface was used to administer and distribute the survey, “Survey Xact”. This system gathers the project in one work space, allows for mass-emailing, sending out reminders to non-respondents, re-contacting respondents with incomplete answers and facilitates participation from remote locations.

The survey was closed in February 2014. A benchmarking report was afterwards developed and emailed to the participating companies to provide them their attained mean score in relation to other participating companies, according to the survey agreement.

3.2.1.1 Survey Respondents

A list of available publicly listed companies’ contact information was collected from the Orbis database. Criterions of selection were that the companies report intangibles, practice R&D activity and had an email or web address available

for middle or top management. The questionnaire was aimed at key persons and managers, where the desirable respondent positions were CEO, CFO, CIO or KMO. A letter of invitation, project description and requirements of participation were e-mailed with a link to the questionnaire.

The total number of respondents is 29. From these, 18 are from Scandinavia and 11 from the U.S.. Partially incomplete answers were also available (23) but could not be used due to the fact that all variables are required for the analyzes, which are balanced, i.e. no missing data. Even if the incomplete observations were to be accepted into the study, the provided answers are too few to consider, even in an unbalanced data set and they have therefore been totally omitted.

The respondent companies have a vast diversity, from arts and entertainment to construction and manufacturing, where the majority of them have a strong IT-based culture, often linked to a special purpose within biopharmaceuticals, biotechnology, medical or industrial devices, robotics, digital imaging and telecommunication. Some of them have been in business for more than 150 years, others are relatively newly founded as new or emerging branches from previous organizations. Some of them have a strong affiliation with universities, research centers or are university spin-offs.

The main characteristics of the respondents and the participant companies are summarized, where the names of the companies are anonymized in agreement with the survey offer. The companies which the survey respondents represent are from Denmark (2), Norway (3), Sweden (13), adding up to being representatives of Scandinavia (18), and from the United States (11), cf. Table 3.2.1.1. One company is of financial type, 26 are industrial and 2 are insurance companies. The table also offers additional information on the 10 represented NACE Rev. 2 main sections sector codes and the main stock exchanges on which the companies operate. This sample of companies is adequate for this study since they are all respondents of the targeted group. Even if the response rate is low (0.74 %) in comparison to the amount of contacted companies (3884), the study is still adequate since the companies are listed on major stock exchanges, belong to the areas of interest (Scandinavia and United States), and their representatives have personally answered the tailored survey, making this data set unique and novel in research scope due to its previously not yet tested research questions. Another reason of confidently accepting the low respondent rate is the fact that each company is included on basis of its abnormal returns in rela-

tion to competitors from the same industry to eliminate bias. This adjustment is discussed in detail in Section 3.4.3.2, where the measure of abnormal returns is developed in relation to companies from the same industry.

The respondents are a majority of males, 26, compared to 3 female respondents

	Denmark (2)	Norway (3)	Sweden (13)	US (11)	Total (29)
Financial	-	-	1	-	1
Industrial	2	2	12	10	26
Insurance	-	1	-	1	2
B - Mining and quarrying	-	-	3	1	4
C - Manufacturing	1	-	5	4	10
F - Construction	-	-	-	1	1
G - Wholesale and retail trade	-	-	1	-	1
H - Transportation and storage	-	-	1	-	1
J - Information and communication	-	1	1	2	4
K - Financial and insurance activities	-	1	2	1	4
M - Professional, scientific and technical activities	-	1	-	1	2
Q - Human health and social work activities	-	-	-	1	1
R - Arts, entertainment and recreation	1	-	-	-	1
NASDAQ National Market	-	-	-	3	3
Nasdaq OMX - Copenhagen	2	-	-	-	2
Nasdaq OMX - Stockholm	-	-	11	-	11
New York Stock Exchange	-	-	-	2	2
Nordic Growth Market	-	-	1	-	1
Oslo Bors	-	3	1	-	4
OTC Bulletin Board	-	-	-	6	6

Table 3.2.1.1 Company Characteristics (Location, Type, NACE Sector and Main Exchange)

with diverse degrees of education, cf. Appendix 2. Their age varies between 33 and 75 years. The median age of 55 indicates that the average respondent is middle-aged. The total leadership experience varies between 5 to 45 years of practice, with a median of 20 years.

3.2.1.2 Scale Construction

The questionnaire uses a Likert scale of seven steps. The Likert scale is a bi-polar scale ranging from the value of 1 to 7, cf. Table 3.2.1.2.

1	2	3	4	5	6	7
Not Applicable	Very Little Extent	Little Extent	Some Extent	Moderate Extent	Considerable Extent	To a Great Extent

Table 3.2.1.2 The Likert Scale of the Questionnaire

A value of 1 indicates a non-response, where the reason is the lack of the practice or concept within the respondent company. Such a value filters out respondents who have no investment or practices of the raised issue and is the most appropriate solution to elimination of bias in the responses (Schwartz and Hippler, 2004). This approach was applied because some respondents might feel tempted to answer "1" even if the practice is not present, or answer "1" where they do not agree with the practice, making it biased when subjection guides the replies. Thus, the option of choosing "not applicable" in the questionnaire eliminates bias by not forcing unrealistic answers with limitations.

The values 2 to 7 indicate the level of agreement with the question, where the level of agreement increases as the numerical value increases. The scales are built upon equally distanced intervals, being highly suitable for the purported analysis method and avoids a tendency of central bias in responses.

The scale is furthermore developed to be compatible with the frequency of occurrence in the secondary data, where the ranks obtained through applied indices are divided in equal bins. The meaning of the studied concepts is specified in the specific analyses under each associated section. The survey constructs are presented in Appendix 1.

The survey also contains checkboxes for multiple selections and categorical yes or no answers where applicable. The questionnaire items are constructed on basis of concepts accentuated during the literature study and aim to tap into the theoretical concepts' representation in practices and identify divergences between the theoretical concepts' agreements with the corporate practices. Never-

theless, several previous related surveys have been consulted and some of the concepts have been adapted into the study where appropriate.

3.2.1.3 Perceptual and Objective Scales of Measurement

Objectivity is integrated in the proposed scales on basis of operations strategy literature, where Slack and Lewis (2003) has been of great inspiration for the structure of the questionnaire. The concepts have first been defined in agreement with common strategic classifications of the aspects under study. Thereafter, the evaluation criteria outlined in the evaluation model proposed by Nielsen et al. (2006) are integrated to link strategy and intellectual capital in a research design structure that remains objective throughout the body of research and where future studies can replicate the design to ensure comparable findings. Nevertheless, the incorporation of the three evaluation criteria of resources, activities and effects represent an improvement in relation to most previous research studies, where no regard is generally taken to the decision-making areas through this classification.

Where adequate, the scales are adapted on basis of prior research studies in order to relate the findings to prior findings, with the slight modification that the scales were modified to directly measure the impact of the interactions between the variables. Hence, it is the mutual or causal relationship between the variables that is measured in equally-scaled dimensions of magnitude, Likert scales. This approach makes it possible to get a value of how high the knowledge capacity of the companies is on basis of their practices in relation to their market value. Individual, business unit and market levels of operations strategy are all represented in order to best reflect reality in the model.

These outlined precautions have all been taken to ensure that the perceptions of the mangers in relation to the analyzed aspects are structured and optimized for the best possible validity degree, minimizing hence bias of the single respondent through a careful formulation of the questionnaire design. Nevertheless, the option of choosing “not applicable” in the questionnaire eliminates bias by not forcing unrealistic answers with limitations.

3.2.1.4 Pilot Test and Survey Re-design

The survey was tested and improved in two phases. The aim was to evaluate the relevance and clarity of the questions and guarantee a high level of questionnaire validity before the final questionnaire was mailed out to the targeted companies. First, the survey contents and format were discussed with experts within operations management and economics at the department of research. Several improvements were made in terms of clarity of questions and focus given to the raised issues by restructuring the question order and underlying structure to better match the analytic model described in Section 3.1.3.1. The second round of the pilot test consisted of mailing it to selected pilot testers at the university department for completion online and get their feedback. This second step added to its quality in terms of clarity and diminished ambiguity. The final survey version was mailed to the respondents and is presented in Appendix 1 as empirical data collection for this study.

3.2.1.5 Scale Validity and Measurement Error Bias

Remenyi et al. (1998, p. 291) write that validity is the degree to which what is observed or measured is the same as what was purported to be observed or measured. The theoretical foundation should direct the collection of data, which otherwise is irrelevant if it lacks connection to the adopted concepts (Bryman, 1997). This fact is accounted for in the analysis by a) validating the survey scales in terms of Cronbach's alpha and b) through ensuring a statistically significant fit of the accepted analysis models. More about validity and model fit is discussed in Chapter 4, the data analysis.

3.2.2 Secondary Data: Annual Reports

The first type of collected secondary data documents consist of published annual reports, collected directly from the respondent companies' representatives, web sites or diverse other online sources for all the included survey respondents. This secondary data source serves in the development of the strategic discourse analyzes and formulation of individual and aggregated indices. The annual reports analyzed in this study cover the financial year 2013.

Since not all the companies had their reports available online for collection, the ones with missing documents were contacted through email and phone. The reports were collected in English where possible, but the available languages were English, Swedish and Norwegian. The Swedish, Danish and Norwegian documents underwent translation. Some of the files were in image form, so they also needed transcription before translation. This was accomplished on basis of optical character recognition, before translation into English, which was chosen as common language to assure a reliable content analysis across all participating companies regardless of region.

3.2.2.1 Formulation of Disclosure Indices and Coding Map

A coding map was created for coverage of the companies' disclosure trends in this study as well. It is a tool of identifying structures in the representation of the disclosed issues based on linguistic composition, and to be applied on the annual reports to extract indices of disclosure. The aim is to understand the reports in a more analytical way, by measuring the frequency of occurrences of the studied phenomena and to link them to the evaluation models based on the a priori specified expectations outlined in the hypothetical objectives.

The coding map is presented in Appendix 3. The indicators have been collected from previous research papers where appropriate (Mouritsen et al. 2001; MERITUM 2002; DMSTI 2003; Rimmel et al. 2004; Bukh et al. 2005; Nielsen et al. 2006) and own indicators were developed to construct a general coding map useful to survey the development of the analyzed companies. All indicators have been placed within dedicated categories, in agreement with the analytical model, cf. Figure 3.1.1. The categories represent the main variables, namely "strategy", "innovation", "intellectual capital" and "disclosure". The "resources" column represents the management objects, i.e. value-adding resources of interest. The "activities" column represents activities which define diverse investments made in order to generate value based on knowledge resources, whilst the "effects" column defines what a third party can do, i.e. achievements often associated with satisfaction.

This coding map will be applied directly on the text corpses of the annual reports to extract the key factors of interest and count their occurrence frequency. In this way, the categorical classification of the indices allows for focusing on

similarities and differences in the employed resources, investments and success factors, while examining the trends of disclosure of the included subjects. The distribution is relative since it is used in relation to the total score obtained by the participating companies, yet structured through the analytical framework employed in this study into the defined categories of interest.

Rodgers (2007) writes that the value of information is different from factory-based management and accounting techniques since it is more difficult to capture and financial measurements are more rewarded on the capital markets. In order to be made measurable, knowledge-based assets can be assigned numerals "to represent elements or a property of elements in a specified system on the basis of isomorphism or homomorphism existing between one or more empirical relational systems (ERS) and one or more numerical relational systems (NRS)". Such numerals make nominal (classification), ordinal (rank), interval or ratio-type measurements possible. In order to map a reliable homomorphic scale of measurement, its theoretic support, representation, uniqueness and meaningfulness must be in agreement with its form.

A rank measure is therefore next developed to evaluate the companies' indices by. This approach is highly suitable because the survey used in this study was developed on basis of scales from 1 to 7, and by developing this second reflecting measure, adequate comparisons can be made between the characteristics of the primary and secondary data. The rank that a company can attain is based on the ratio of the frequency of occurrence *i* of the á priori specified indicators per category *j* (strategy, intellectual capital, innovation, and disclosure):

$$\textit{Disclosure Score Rank } t_j = \sum_{1 \leq j \leq 7}^{T} d_j(t_{ji}) \qquad \textit{(Equation 2)},$$

where t_j expresses category rank *j* based on occurrence frequency *i* and T is the maximum score that a company can achieve per category *j*. The maximum number of rank is 7 for all the stated categories, to be comparable with the primary data responses collected through the survey. Hence, the number of occurrences per category is ranked in relation to the universal floor and top values registered across all of the categories. The ranks are divided in equal bins, with a cumulative threshold of $t_j = 0.1429$ per rank (equivalent to 1 divided by 7).

Most studies do not classify the information spectrum in sub-categories, and if they do, these are usually not related to profits in relation to the competitors in the industry. Nonetheless, these studies do not compare the quantum of information (rank-based) to primary insights into intellectual capital management (also rank-based). This study is therefore based on an improved and novel approach, which has not been tried before in relation to abnormal returns and internal management survey data, nonetheless based on the employed intellectual capital model for additional inquiries.

3.2.3 Financial Market Data and Variable Development

The second phase of the secondary data collection concerned financial data. The purpose of collecting this information is to analyze if knowledge-based investments can be attributed a market value on basis of the hypothesized model and how the successful respondent companies manage their knowledge internally and report about it externally.

3.2.3.1 Market Value – Definition and Its Importance

The real market value data construct is included in the study in order to analyze internally managed profitability in relation to the competitors'. Market value is the forward-looking expectation of what a company's shares are worth (Johnson et al., 2001; Andriessen, 2003; Abhayawansa and Guthrie, 2010; Baginski et al., 2014). The reason of choosing market value over book value is that market value is a measure which incorporates a firm's intangible value which is attributed to the firm, including its culture, trademarks and brands, whilst book value is an accounting measure and thus historical which often omits these intangible assets. Book value is an accounting measure and has thus a historical focus, in-house investments are accounted for as expenses, and therefore, the difference between the market and book values of a firm can differ. This is a major issue when assessing fair firm value. Furthermore, as the book value often undervalues assets to a considerable extent, the market value variable is herein normalized by a firm's total assets.

The formula used to calculate a company's market value is *market capitalization* and is herein used as a *profitability-indicating proxy*:

$MCAP_i = Common\ Shares\ Outstanding_i * Stock\ Price_i$ *(Equation 3).*

Market value data were collected from the database Orbis of Bureau Van Dijk, from where the company contacts also were retrieved for the survey. For the 29 respondent companies, market-, shareholder value, total assets and common shares outstanding data were collected for the year 2013. The data had missing values for eight of the respondent companies, so these were collected directly from the stock exchanges instead (market price and shares outstanding). The total asset information was collected from the respective annual reports. "Market Value per Share" was calculated as the yearly averaged product of the volume of common shares outstanding and the daily end prices, representing thus the total value of all investors' stakes in a company. The following definitions were used in the calculation of the yearly market value *i* (per share):

$MVPSH_i = \sum Daily\ Stock\ Price_i * Common\ Shares\ Outstanding_i / Number\ of\ Collected\ Daily\ Observations\ per\ Company\ and\ Year\ (i_{max})$[11] *(Equation 4).*

The data were exchanged to USD with the corresponding exchange rates of the 2013, cf. Appendix 4.

3.2.3.2 Accounting for Risk by Assessing Fair Firm Value

Stewart's (1997) concept of "value defined by the buyer" and not the seller is an important theorem since a company is worth what the stock market says: price per share multiplied by the number of outstanding shares. This assumption of market value contends the idea that everything that is left after subtracting the fixed assets represents the intangible value generated by the company, although the description of intellectual capital can be somewhat generalized by this definition. To further optimize the market value information, a firm's relative position in its industry was computed[12]. Data was again collected from the Orbis database, from where the companies were selected for the survey in the beginning of the study. The search strategy applied contained listed companies, active with/without recent detailed financials and the relevant NACE Rev. 2

11 The results were adjusted by division with the yearly total assets value, collected from the annual reports where necessary, to ensure a fair comparison with the rest of the yearly calculations.

12 In agreement with modern recommendations of the resource-based and knowledge-based views, a firm's value should be computed as relative to others from the same industry.

main sector codes to match the characteristics of the respondent companies, per country and a relevant time frame, 2004 to 2013, to ensure sustainability.[13]

The data set was next sampled to include only complete cases of the variables of interest (number of patents, number of trademarks, net income, total assets, shareholder's funds/stockholder's equity, market price at the end of the year, number of common shares outstanding, country and NACE Rev. 2 main sector). The final data sample contains 41.845 companies which are used herein as industrial benchmarking groups. It is impossible to know if the companies in the Orbis database represent the total market, so the selected companies are considered to represent the obtainable market-level control group given the targeted sectors and the total population of companies to which the survey was distributed based on this same data source. The financial values were deflated to base year 2013 to ensure validity against the survey results, cf. Appendix 4 for the applied deflation values.

The industrial sample is broken down by location (country) and NACE Rev. 2 sector in Table 3.2.3.2a. This sample is hereby accepted as adequate since the respondent companies are within the represented sectors.

NACE Rev. 2 Main Sector	Denmark	Norway	Sweden	U.S.	Total
B - Mining and quarrying	7	152	83	2378	2620
C - Manufacturing	447	293	1052	14748	16540
F - Construction	37	29	50	493	609
G - Wholesale and retail trade	33	-	225	2700	2958
H - Transportation and storage	54	177	33	800	1064
J - Information and communication	104	109	358	4287	4858
K - Financial and insurance activities	337	107	247	9104	9795
M - Professional, scientific and technical activities	10	38	196	2100	2344
Q - Human health and social work activities	21	-	31	590	642
R - Arts, entertainment and recreation	64	-	40	311	415

Table 3.2.3.2a Industrial Sample Breakdown by NACE Rev. 2 Main Sector (No. of Observations)

13 The most recent search was performed on October 18, 2014, in Orbis database (Bureau Van Dijk). Denmark is represented excluding Faroe Islands and Greenland and the U.S. are represented excluding American Samoa, Guam, Northern Mariana Islands and Virgin Islands because none of the respondent companies are located in these areas. The search returned a total of 1.433.158 observations before sampling.

The companies' competitivity per sector and country was next calculated as the mean of the industrial *market capitalization/total assets* ratio for the total analysis time frame (2004 - 2013). These values are included to indicate the relative competitive positioning of the included main industrial sectors and their rank, cf. Appendix 5. Ranking (1 - 7) was assigned as recommended by comparing the achievements to seven equal probability bins between the minimum and maximum values of the whole data set.

Equation 5 was next applied to compute the abnormal market capitalization of the companies in relation to the median achievements of their industrial sector of belonging, with regard to location (country) and year:

$$Abnormal\ Returns_i = Industrial\ Average\ Market\ Capitalization_i / Total\ Assets_i - Firm's\ Market\ Capitalization_i / Total\ Assets_i \quad (Equation\ 5).$$

The abnormal returns' z-scores were also calculated, by dividing the abnormal return value of each company by its standard deviation value. The calculation of z-scores has been shown to be much more reliable than the inclusion of mean values (Altman 2000; Agarwala and Taffler, 2007), which already has been accounted for previously by calculating the abnormal returns values and all categorical variables on basis of the median as the threshold.

The mean abnormal returns and the respective computed z-scores are presented along with the number of respondent companies per sector in Table 3.2.3.2b:

NACE Rev. 2 Main Sector	Country	Mean ABN	Z Score	No of Companies
C - Manufacturing	Denmark	1.9872	220.0488	1
R - Arts, entertainment and recreation	Denmark	0.9705	46.4574	1
J - Information and communication	Norway	-0.5505	-0.2193	1
K - Financial and insurance activities	Norway	0.3602	0.1400	1
M - Professional, scientific and technical activities	Norway	8.6647	3.3437	1
B - Mining and quarrying	Sweden	-0.3319	-0.0417	3
C - Manufacturing	Sweden	0.5034	0.1571	5
G - Wholesale and retail trade	Sweden	1.7245	0.3886	1
H - Transportation and storage	Sweden	-0.0120	-0.0010	1
J - Information and communication	Sweden	-0.0557	-0.0044	1
K - Financial and insurance activities	Sweden	0.1394	0.0130	2
B - Mining and quarrying	US	2.8701	0.1921	1

C - Manufacturing	US	3.0245	0.3771	4
F - Construction	US	0.2092	0.0110	1
J - Information and communication	US	0.0001	0.2387	2
K - Financial and insurance activities	US	0.3228	0.0165	1
M - Professional, scientific and technical activities	US	5.5047	0.4719	1
Q - Human health and social work activities	US	0.0001	0.2016	1

Table 3.2.3.2b Abnormal Returns Respondent Sample Breakdown by NACE Rev. 2 Main Sector and No. of Observations

3.3 Employed Methods of Analysis

Latent class modeling is first applied to formulate “managerial profiles” of interest, in order to study both the internal management and external reporting practices in relation to profitability on the market. These are formulated on basis of a) perceived profitability and b) achieved profitability (abnormal returns) to combine the personal traits of the respondents with their actual realizations. These “managerial profiles” are thereafter applied throughout the study, to structure the data of both primary and secondary nature, so the respondent companies' practices within the areas of interest become observable. The managerial profiles are discussed in detail in Sections 4.1 and 4.1.1.

The internal management analysis step follows next (cf. Section 4.2), and adheres closely to the “confirmatory objectives” described in Section 3.1.3.1. It makes use of the direct appliance of the empirical model described in Figure 3.1.2 on the primary data, where latent class analysis is applied to verify the hypothesized paths and causal structures on the primary data. This analysis step is equivalent to the internal management of innovation and intellectual capital, in relation to internal disclosure practices and financial effects.

Data mining (content analysis) is next performed on the external data, within the same grouping of “managerial profiles”. The main scope is to identify which disclosure practices are present in the respondent companies, and if these are linked to higher profitability on basis of the intellectual capital model's stated key terms (coding map), cf. Section 3.2.2.1.

Analyzes of variance and ranking are lastly applied to link the internal and external practices per “managerial profile”, and summarize what the differences

between successful and less successful companies are in terms of internal intellectual capital and innovation management, disclosure and their respective effects in financial terms and competitivity.

The analysis methods are next briefly summarized in familiarization purpose.

3.3.1 Latent Class Analysis

Latent class analysis is a technique used to classify observations based on patterns of categorical responses. It is a useful tool of machine learning as it helps reveal hidden categories when the probabilities of the independent variables are not independent. Since survey logic can be latent and overlapping, this is a suitable and flexible technique of modeling uncategorized dependencies (Linzer and Lewis, 2013). This method is not commonly applied in intellectual capital studies, although it has wide practicability within other adjacent areas such as finance and economics. It suits the purpose of categorization and its descriptive abilities can help in identifying differences across management groups while allowing for observing important differences. Since the collected responses are too few for applying structural equation modeling, this analysis technique can offer reliable appliance on the collected data set.

3.3.2 Data Mining (Content Analysis)

Williams (2006) writes that the use of the content analysis research method is suitable to analyze the discursive practices of strategizing and organizational effects. By analyzing available data, procedural information and contextual analysis, valuable knowledge can be developed on basis of existing narratives. Francis and Flynn (2010) write that data mining is an increasingly applied method of information analysis and knowledge inquiry, in e.g. content analyzes. It is useful for the identification of frequently occurring words, word frequencies, correlations between words, similarity and distance measures and cluster analyzes of content. The results of such analyzes can help interpret underlying constructs and even importance in relation to other constructs, increase the understanding of the causes behind the researched topic and outline patterns and trends in the disclosed information.

3.3.3 Analysis of Variance

Analysis of variance (herein abbreviated “ANOVA”) is a technique applied to identify differences between groups. It serves as a validation tool for ensuring that speculated or observed differences are statistically supported (Mendenhall and Sincich, 2011). It is herein applied to link the internal and external analysis together and to validate the findings' overall accuracy.

3.4 Model Reliability

Remenyi et al. (1998, p. 289) write that reliability is the degree to which observations or measures are consistent and stable. Most of the applied measurements and statistical tools have been identified in various theoretic and research sources and have been rendered adequate and further adapted to this research. This cautionary step makes this study profound and more complex than most studies within the intellectual capital field. The industrial data are inflation-adjusted to ensure actual and concise measurements and the sampling procedure was carefully implemented. For the secondary data, reliance is accorded to the information sources regarding their accuracy, actuality and authenticity.

An important aspect of validity is the structure of the proposed model and its stability as a tool of measurement for the proposed research topic. Next, its suitability over previous research tools is argued for on basis of its composition and construction.

Investments in innovation and intellectual capital have been found of interest in different previous studies. Several other authors have linked the resource-based view to intellectual capital practices, where innovation plays an important role to firm performance. Others have linked the knowledge-based view to intellectual capital theory in studies of knowledge and innovation. Whereas the findings of the relevant empirical studies were discussed in Sections 2.1.1 and 2.2.1, it is herein of interest to remark their attempts of measuring and separating the capitals in relation to performance, included theories and strategizing. The preferred methods were to gather data through surveys and separate the intellectual capital concept within human/relational, customer and organizational or structural capitals, unlike the attempts of this study.

Four main reasons of why the proposed analysis model and suggested research approach are more performative than in previous related studies are outlined:

1. Increased Comparability through the Employed Evaluation Framework

It is herein argued that the evaluation model proposed in the Danish Guidelines is a more sophisticated tool of analysis, which a) allows for the decomposition of the intellectual capitals in more adequate classifications (employees, relations, technologies and processes) and b) adds a second disentanglement dimension of typological kind, where resources, activities and effects are distinguished, which is generally rare in previous studies of mixed research design. In many previous studies within this research interest, the comparability factor is weak. Structural capital is often confused with organizational capital, customer capital does not account for all relations that are of importance to a firm and human capital is often measured in levels of knowledge but not in the outcomes it produces in more than e.g. patents. Therefore, by incorporating this newly standardized intellectual capital evaluation model in the analyzes of firm performance which includes the firms' strategy practices and disclosure practices, higher research depth can be attained on basis of well-developed analytical dimensions, as well as create a framework which allows for increased comparability and replicability in an otherwise rather unstructured research field.

2. The Inclusion of a Theoretical Direction

Scott (1998, pp. 355-358) specifies that outcomes are never pure indicators of quality of performance, since they reflect not only the care and accuracy with which work activities are carried out, but also the current state of technology and the characteristics of the organizations' input and output environments. The decision of how to treat input characteristics and output environments is not primarily a methodological, but a theoretical issue. This guidance has been accounted for through the inclusion of the strategic practices in relation to the evaluation matrix of intangible management. Hence, the analysis should reveal which of the management aspects are misaligned or competitive on a more reliable basis. Moreover, the economizing, organizing and modularizing aspects of knowledge resources can be directly tested in relation to empirics.

The research design is performative cf. Mouritsen (2006), in the sense that this study does not just verify á priori defined expectations, but also adds new knowledge and inferences though explorative analyzes. Through new findings, this research study can help diminish the limitations of global firm comparability by defining difficulties and strengths created at the micro level. Organizational development and economic growth can be supported by presenting how already successful companies manage their businesses. The familiarity with the measurement of intellectual capital and its importance to organizational development and economic revenue can be increased. More knowledge can be identified about managing and controlling intellectual capital resources, activities and their effects, in relation to innovating and internal and external reporting.

3. The Inclusion of a Social Context

Lazonick (2005) writes that the innovative firm works by the theory of learning as an outcome, where strategy, finance and organization are interlinked as dynamic processes with knowledge-assimilation. The social contexts of firms might vary by industry or knowledge level. Given the refinement degree of the enumerated two factors, it can again be argued that the model offers a tweak of analysis in the right direction based on asymmetric information.

4. The Inclusion of Commonly Omitted Levels of Linkage in Order to Facilitate Grounded Theory Development

MacKenzie (2006, p. 21) brought critique towards the Black-Scholes-Merton model – which is often used to define if the patterns of market prices have moved towards greater conformity as a tool of performativity – that the model only yields an option price after the characteristics of the option and the values of the parameters have been set. Therefore, one parameter, the volatility of the stock, is acknowledged to not be directly observable, as there is no unique theoretical price to compare to the "actual" price. When performing an analysis of such type, the researcher is not just examining economics and those who develop and use it. The analysis inevitably becomes a study of the objects that economics analyzes. MacKenzie (2006, p. 23) further brings critique against the Capital Asset Pricing model and specifies that there always is a risk taken in a majority of economic calculations. When the analysts use e.g. "easily measur-

able after-the-fact realized returns as proxies for expected returns" instead of making attempts to measure these expected returns directly, in e.g. the shape of investor surveys, the degree of miss-specification increases dramatically.

Even the simple inclusion of theoretically-based assumptions in relation to registered data in econometric modeling can increase the accuracy of studies of performativity. When the models indicate little conformity with the empirics, there is always the danger of an undermination of the market conditions, processes and prices that are posited by theory. It can therefore not be ignored that such a misalignment of theory and data is a sign of warning, where it should be further analyzed how "reality" exists entirely independently of its theoretical depiction. (MacKenzie, 2006, p. 24)

By not including the internal performance management objects in the empirical model, one would first make the mistake of relying solely on the volatility of external reporting and disclosure in relation to market value, leaving hence an immense room of error. Through the inclusion of the existing qualitative reporting types and primary data, this study safeguards against a vast error space and references drawn to no existing theoretical values to compare to the "actual values". It can further be argued that the error level diminishes with the amount of information and the connectivity of the two research streams outlined in the research questions, cf. Section 1. Whilst the corporate outcome is attributed to internal management causes in the shape of resources and activities, the effects are also accounted for on basis of additional sources such as reporting. Nevertheless, the output, i.e. the market value of the company, is actually put in contrast with and evaluated against an actual theoretical expectation on basis of intellectual capital management and accounting, which through the contents of reporting has gained a physical ground and is no longer totally abstract from the "reality" of analyzed objects if the analyzes indicate a level of agreement.

To overcome the theoretical shortages of the resource-based and knowledge-based views of conflating the objects of analysis with their effects and rather vague operationalization of actual outcomes, it can be argued that the context of analysis is maintained in this study. In conclusion, the suggested model allows for analyzing the disentangled intangible capitals within their context, in relation to strategy, disclosure and financial effects. It is simultaneously measuring intellectual capital as a total and entangled object. Nevertheless, the otherwise unaccountable theoretical aspects are introduced into the er-

rors of the equations, accounting in such way for the grave shortcoming of not having a referent value within the analyzed volatility of the considered parameters. Insofar theories arise out of the data and are supported by the data, they can also be considered to be grounded.

3.4.1 Sample Adequacy

The collected data samples and applied analysis techniques categorize this research project as a multi-case study, highly suitable for the suggested mixed analysis methods (latent class analysis, data mining and analysis of variance). The diverse nature of the complete data set (primary and secondary data) allows for relating the data types by linking causes and effects, from which case-specific conclusions can be drawn. Besides obtaining an overview of the case companies' development given their analyzed practices, unique inferences can be drawn regarding what makes some companies more successful than other.

The number of primary data responses (29) is adequate for the considered analysis techniques of non-linear type (latent class analysis and logistic regressions). All included responses are balanced, i.e. no missing observations, in order to ensure the most homogeneous coverage possible. Furthermore, the divergence in industries and locations is accounted for rigorously because the companies' achievements are benchmarked towards their respective industrial achievement with regard to location and year, rendering the rather low response rate insignificant due to the applied approach.

This study is mainly exploratory and therefore not necessarily generalizable. It is a novel attempt of conducting an over-viewing test covering all areas of interest. This has never been tried before in the research field and new knowledge is possible to extract from previously untapped data.

3.4.2 Analysis Software

The data analyzes are mainly performed in “R” by the Foundation for Statistical Computing. This data analysis environment ensures enough flexibility to allow for the complete data set to be analyzed by all suggested techniques, while maintaining all information within one complete project. Microsoft Excel and Notepad have also been used to prepare the data for import into the R project.

Chapter 4 – Data Analysis

This chapter presents the diverse analyzes performed on the primary and secondary data, along with their results and main findings. The data consist of 29 unique cases, which aim to serve in the purpose of developing new propositions based on fair comparisons. In order to address "what, how and why?", several methods are employed in order to summarize, visualize, evaluate and reflect on the findings. The research strategy is to count, visualize, relate in models and link with regard to causality, which is expected to be verifiable (i.e. confirmatory) in the relevant tests. The analyzes are nevertheless exploratory in terms of a) being evaluation methods based on new development, and b) tools of developing grounded theory by testing new hypotheses on previously untapped data. By creating the suggested "management profiles", nothing is assumed about the relation capability-based organization, disclosure and effects, yet it is possible to analyze all the aspects separately for different profitability groups.

The "management profiles" are developed on basis of utility theory and its risk assumptions, where the respondents' a) abnormal returns in relation to competitors from the same industry and b) their perceived profitability are considered as utility and risk proxies. A latent class analysis is thereafter performed on the internal management data and the hypotheses stated in Table 3.1.3.1 are tested for correspondence across the identified profiles. Next, the same profiles are used to structure and mine the annual reports data to identify the reporting trends of the identified manager types.

The internal management practices are lastly linked to the external reporting ones in Section 4.4. Herein, it is defined "How much less is disclosed about than managed internally?" per managerial profile. A summary of the findings is offered in Section 4.5, and the main results and implications are discussed in Section 4.6.

4 Dedicated Tests and Analysis Results

In this chapter, the tests suggested in Section 2.5.1 are empirically applied to the collected data, of both primary and secondary nature. Figure 4 presents the elaboration process applied throughout this chapter, along with the relevant details and resources.

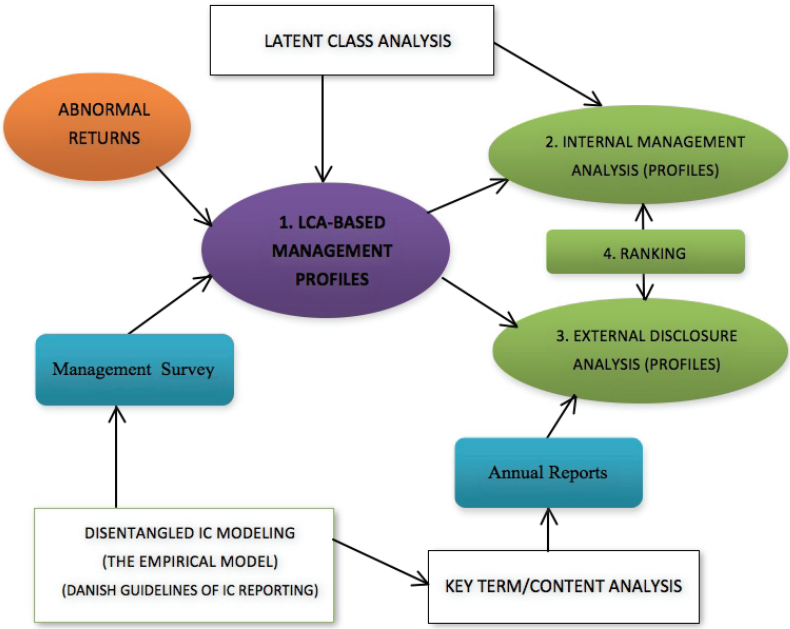


Figure 4 The Elaboration Process

1. Formulation of Independent "Management Profiles"

The "management profiles" are the main classification tool of this study. They are important because they do not assume anything about the relation under study (knowledge-based organization, disclosure and effects), yet cluster the participants into different profitability groups based on actual realizations and specific traits. The second dimension of the profiles is represented by perceived profitability, where the sociological belief of the participants is contrasted with their actual realizations to account for the risk aversion level.

Latent class analysis is used to create the profiles, because with the current data sample it is not possible to perform a structural equation analysis. This method is highly appropriate for the data sample because it reveals underlying structures and the identified profiles are possible to apply throughout the whole analysis process.

The respective profiles were created on basis of a threshold of the median of the abnormal returns rank variable. A 7-step Likert scale was developed by ordering all values from minimum to maximum and thereafter divided in 7 equal bins, where a rank of 1 is the lowest, containing negative values, and a rank of 7 is the highest, containing maximum values. The median value for 2013 is at 4, so all ranks above this value have positive abnormal returns. The creation of the "managerial profiles" is presented in detail in Section 4.1, where the identified classes represent different groups of managers with differing traits and differing profitability levels. These profiles will be used to structure all upcoming analyses in order to reveal the specifics of each manager group.

2. Internal Management Analysis

The "management profiles" are in this analysis part applied on the primary data to reveal the different intellectual capital, innovation and disclosure practices of the respective management groups. The empirical model is herein operationalized to confirm or reject the theoretically supported paths of value development, on basis of the collected empirics. The analysis results in the evaluation of the hypothetical beliefs, and hands-on examples of how successful managers attain positive financial effects through internal management practices. Nevertheless, it is outlined where the other manager classes differ and how a successful configuration looks like in real business, based on the assumptions of the formulated intellectual capital model. The model is estimated in disentangled intellectual capital terms, with the additional areas of innovation and disclosure and validated in agreement with statistical requirements.

The main questions asked are "How do firms attain higher financial effects through a differing internal management of intellectual capital and innovation, in relation to reporting?", and "Are there any benefits from asymmetrical information or innovation type given intellectual capital's assumed idiosyncrasy?", cf. Section 2.5.1.

3. External Reporting Analysis

Next, the "managerial profiles" are applied on the external reporting data, i.e. the annual reports. The coding map is run on the contents of the annual reports, and disclosure indices are formulated. This analysis part also reveals the disentangled intellectual capital reporting trends of the managerial groups, where the specifics of each type of manager are summarized in relation to their actual profitability, again on basis of the employed intellectual capital model.

4. Linkage of the Internal Management and External Reporting Analyses

The literature review suggested a certain mediation of effects through disclosure, so there is good reason to believe that accounting practices are of certain importance when valuing the financial effects externally. At the same time, since a knowledge organization is practicing disclosure in the scope of improving its market-level effects, there is good reason to assume that all three areas under study are somehow related. This is hence a new approach to understand disclosure on basis of actual measurements, where risk, strategy and future ambitions are evaluated in their rightful context as disentangled areas of interest. Herein, new propositions will be created in order to assess theoretical correspondence and formulate new grounded theory.

In this analysis part, the internal and external analyses are triangulated on basis of differences in global ranking and percentages between the "managerial profiles". The intellectual capital model guides this analysis part as well, and it is in these findings where the most important knowledge of this study is developed, since all areas of interest are united in one and the same analysis.

The differences between the managerial groups are validated through ANOVAs (Analyses of Variance) to ensure statistically significant differences between the groups. Nevertheless, new propositions are developed on basis of the findings, which allow for relating the internal management to disclosure trends and the actual profit level on the market in relation to competitors from the same industry. The main question asked is "How much less is disclosed about than managed internally?", where the strategic differences are presented in detail per topic for the first time in an analysis of intellectual capital and reporting which accounts for both internal knowledge management, reporting and actual realizations on the market in comparison to competitors from the same industry.

4.1 Creating Adequate Management Profiles

Previous studies like Youndt et al. (2004) and Carmeli (2001) have developed profiles for deeper analysis approaches. The profiles developed in this thesis are different from the previous ones in the research field since they directly measure the interaction's magnitude between elements of intellectual capital, strategizing and innovation, and not just their levels. By leveling the financial performance of the companies instead, this study allows for identifying the dynamics of different management configurations on basis of intrinsic diversity. Through the survey's composition, even causality is accounted and tested for.

In the following, the adequate "managerial profiles" of the participating companies are formulated by relating actual abnormal profits in relation to competitors from the same industry to perceived profitability, collected through the questionnaire. Profitability is hence the main output under study, with the respective survey item phrased as: "Our performance is higher than our key competitors'" and a level of agreement ranging from 1 to 7, as specified before in Section 3.2.1.2. The main benefit of creating "management profiles" is that they can be used in the upcoming analyses as grouping tools, where different clusters with different profitability and aspirations can be evaluated in relation to each other to reveal drivers of economic value in the companies' internal and external practices. Following the tenets of utility theory, abnormal returns are herein considered to be proxies of utility, whereas the perceived profitability is applied as a proxy of risk. It is therefore hypothesized that managers with a more cautious approach to risk attain greater utility on the market. The median value of perceived profitability is 4 out of 7. Categorical control variables were formulated (perceived and actual profitability), where a score greater than or equal to the respective median was registered as "high" and a lower score was registered as "low". The labels of the companies were divided as follows: "High Profitability" (16 respondents | 55 %), "Low Profitability" (13 respondents | 45 %).

The method of latent class analysis allows for testing latent structures with ease and accuracy and is herein next applied to identify "management profiles" of interest. This analysis method allows for hypothesizing that any observed dependency is due to values clustering within otherwise unobserved subgroups. To test this idea, the following model, hereby presented in matrix form:

$$P(A_i, B_j, \ldots, N_n) = P(A_i|X_n)\, P(B_j|X_n), \ldots, P(N_n|X_n) \qquad \textit{(Equation 6)}$$

where X is a latent categorical variable with n levels, is estimated on the profitability and abnormal returns variables. *n* is specified as the levels of interest (herein positive or negative abnormal returns) and the model parameters (marginal probabilities of class membership and class specific probabilities for each variable) are estimated via expectation-maximization, as common for this data analysis technique. A correctly formulated model should take into account all factors of interest, external or internal, in order to distinguish most effectively between positive and negative effects of the variables' interactions on the outcome. A base model is fitted without covariates since the abnormal returns variable already includes account to the competitiveness rank through its adjustment for mean industrial earnings. Hence, the main variable which conditions and helps classify the outcome further is as specified *perceived profitability*. It is therefore applied as main delimiter of the underlying clusters.

Table 4.1 presents the distribution of the respondent companies' binary abnormal returns value and their dichotomous profitability answers.

As indicated in the table, there are 8 respectively 6 companies who's respondents' profitability answers (1; 0) match the abnormal returns' calculated dichotomous value[14]. The rest of the companies, 15, are mixed in outcome agreement. There are hence minimum 3 expected major respondent group types: "positive abnormal returns", "negative abnormal returns" and a "mixed" group which covers the remaining companies. Alternatively, if the "mixed" group can be divided in two groups based on the abnormal returns values, there might be 4 relevant respondent classes.

The next analysis step is therefore to identify the appropriate number of classes, i.e. "Managerial Profiles".

14 The geographical distribution of abnormal returns in relation to perceived profitability can be seen in a subtest in Appendix 6.

Company	Abnormal Returns (Utility)	Perceived Profitability (Risk)
Company 1	1	1
Company 4	1	1
Company 8	1	1
Company 23	1	1
Company 25	1	1
Company 26	1	1
Company 28	1	1
Company 29	1	1
Company 7	0	0
Company 10	0	0
Company 13	0	0
Company 15	0	0
Company 17	0	0
Company 18	0	0
Company 2	1	0
Company 5	1	0
Company 9	1	0
Company 19	1	0
Company 21	1	0
Company 22	1	0
Company 24	1	0
Company 3	0	1
Company 6	0	1
Company 11	0	1
Company 12	0	1
Company 14	0	1
Company 16	0	1
Company 20	0	1
Company 27	0	1

Table 4.1 The Companies' Agreement in Abnormal Returns and Perceived Profitability

4.1.1 Defining the Appropriate Number of Classes

Latent class models of 2, 3 and 4 clusters were fitted to identify the best structure. Selection of only 2 groups returned a classification depending on the structure of profitability, but not a clear division of abnormal returns. This classification was therefore excluded since it did not correspond to all criteria. The test with 3 clusters returned the anticipated structure of 3 groups, where utility and risk must be both positive or negative in order to agree, and the third iden-

tified group indicates a negative relation between utility and risk. Further tests indicate the suitability of 3 classes over a division in 4 classes, which were not as statistically significant. The model with the smallest BIC and AIC values is to prefer according to the principle of parsimony, yet not at the expense of theoretical assumptions (Linzer and Lewis, 2013). Therefore, the model with 3 classes is kept for use in the upcoming data analyses.

Figure 4.1.1 presents the scree plot. The selection of classes is hence based on a) theoretical criteria and b) statistical relevance. The model with 3 components matches both requirements best and is therefore selected.

This suggested latent classes division of three groups is next used as a general guide to estimate maximum-likelihood based models of interest.

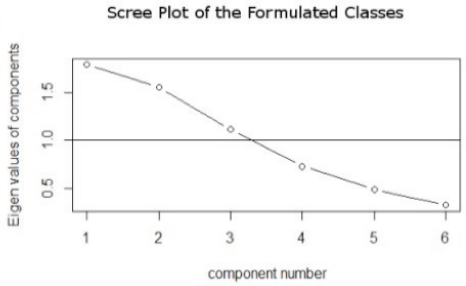


Figure 4.1.1 Scree Plot of Components for Identification of the Optimal No. of Latent Classes

4.1.2 Analyzing Utility and Risk Aversion to Validate the Stated Behavioral Traits of the Identified Management Profiles

The next model tests the relationship among the manifests (i.e. observed outputs) to explain the respective groups' observed response patterns and verify if the utility of knowledge management and related activities behave as expected among the hypothesized managerial profiles:

Utility (Abnormal Returns$_i$) ~ Risk (Perceived Profitability$_i$) *(Equation 7),*

where utility is expressed as the concomitant variable abnormal returns in relation to competitors from the same industry, in rank form from 1 - 7, risk is defined as the corresponding perceived profitability of the survey respondents and i represents the formulated managerial profiles of interest. The rank values are chosen so that the model can vary enough to test the expectations.

The classes are expected to be indicative of utility in the way that the "Pessimistic High Earners" take on a low level of risk, being "risk-averse". The "Realistic High Earners" correspond best to the label of "risk-neutral", and as Salvatore et al. (2012) note, they are usually the most common. The "Optimistic Low Earners" should indicate traits of high risk-taking, where their aspirations and actual realizations are the most differing from all analyzed groups. This group is therefore analogue to the definition of "risk-seekers". The average marginal utility level of the risk seekers should be the lowest, risk-neutral managers usually experience moderate utility and risk-averse managers, being the most thoughtful in their actions, attain generally the highest utility.

Hence, given the presented classification results and first insights into the data structure, "Pessimistic High Earners" are hypothesized to tend to respond negatively towards higher Likert-scale values of perceived profitability, due to their pessimistic responses in the survey compare to their actual realizations, which were high. The reverse is likely to be true for the case of "Optimistic Low Earners", which are expected to answer favorably towards the higher values of the Likert scale used in the survey, yet attained low actual results on the market. The "Realistic High Earners" group is expected to be a mixture which will respond favorably to high respectively low values depending on their actual achievement, but are more profitable than the "Optimistic Low Earners".

After fitting the regression model, the coefficients and computed probabilities were used to predict the differences in profitability between the groups. Figure 4.1.2 illustrates the relationship, which supports the stated beliefs:

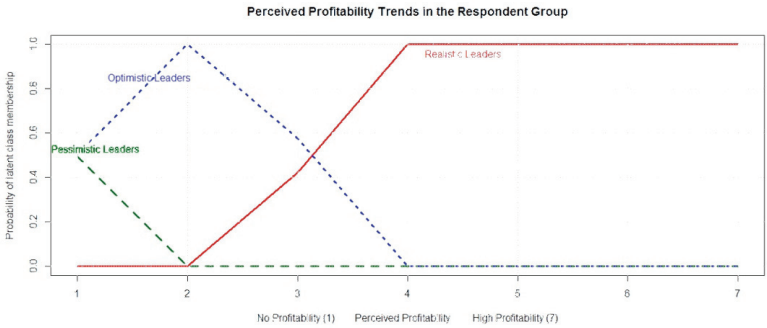


Figure 4.1.2 Differences in the Relative Perceived Profitability by Management Class

These findings are hence supportive of the expected differences in management profiles. The "Pessimistic High Earners" reported lower levels of perceived profitability, even if they had the largest abnormal returns. The "Realistic Leaders" have abnormal returns in agreement with their perceptions, and reported perceived profitability from low to high levels in agreement with higher probabilities of outcome. The "Optimistic Leaders" reported low levels of perceived profitability at a high probability, and high levels of profitability at a low probability. The results of the regression can be found in Appendix 7, Table A7a.

4.1.3 Formulation of the Base (Restricted) Model

The last analysis step of the "management profiles" is to formulate the base model of this study, commonly known as the restricted model. This model consists of the minimum variables of interest, with abnormal returns as a 7-step Likert scale response variable, with the predictor perceived profitability.

The member companies' ids are next presented per class (to the right) in Figure 4.1.3a:

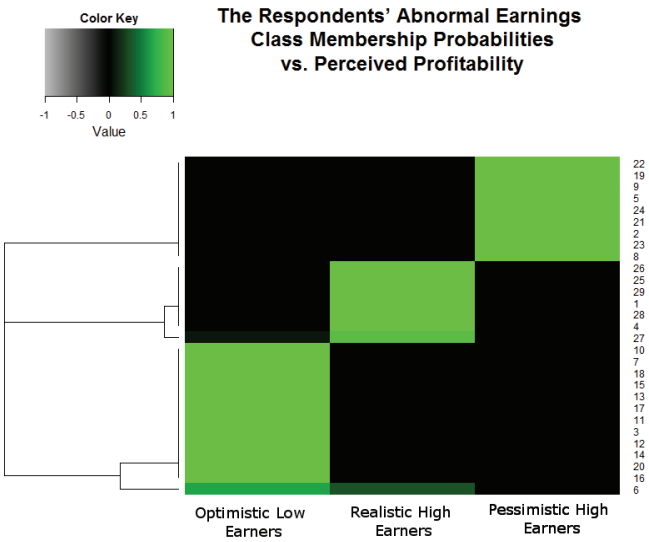


Figure 4.1.3a The Respondent Companies' Posterior Class Membership Probabilities

The "Pessimistic High-Earners" had a tendency of considering themselves less profitable than they actually were (by -78 %) and represent 31 % of the respondent population. The "Pessimistic High Earners" consist of 1 Danish company, 1 Norwegian company, 2 Swedish companies and 5 US companies.

The second class, the "Realistic High Earners" are the respondent group which were profitable/not profitable to a high degree and adequately considered that they were/were not (100 %). The "Realistic High Earners" group consists of 1 Danish company, 1 Norwegian company and 5 U.S. companies. They account for 25 % of the respondent population.

The third class, "Optimistic Low Earners", accounts for 44 % of the respondent population and reported a mixed view of profitability (51 %) which did not align well with their actual realizations on the market. The "Optimistic Low Earners" are a majority of Swedish companies (11 companies), 1 Norwegian and 1 U.S. firm. These companies have negative abnormal returns.

Figure 4.1.3b visualizes the classes based on the computations of the predicted probabilities per increasing abnormal returns rank:

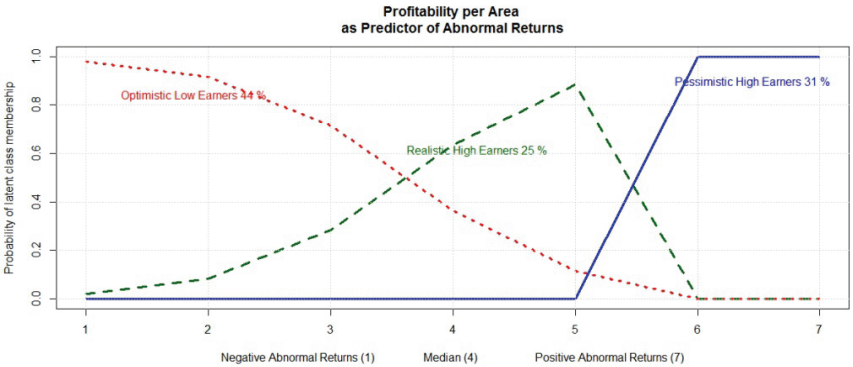


Figure 4.1.3b Abnormal Returns per Identified Management Profile (Base Model)

The "Pessimistic High Earners" are found in the high abnormal returns ranks (above 5), thus at a high probability of being profitable. The "Realistic High Earner" companies are represented at their rightful abnormal return ranks and are successful at generating positive abnormal returns (higher than 4 and less than 6). The "Optimistic Low Earners" have a high probability of representation in the lower abnormal returns ranks (1 to 3), i.e. below the median of 4. Hence, the probability of the "Pessimistic High Earners" attaining high utility is 100 %. The "Realistic High Earners" attain medium utility, with a probability level of 60 - 90 %, while the probability of "Optimistic Low Earners" attaining high utility is decreasing as the abnormal returns ranks increase.

A company from the "Optimistic Low Earners" group had 49 % times the odds of considering itself more profitable than a company from the "Pessimistic High Earners" class without being it. A "Realistic High Earner" company had a 33 % chance of misplacing their true capacity. The regression output is presented in Appendix 7, Table A7b.

4.1.4 Analysis Synopsis

The identified research gaps were previously discussed in Section 2.5.1. In the following, the data will be analyzed for correspondence, and exploratory tests

will be conducted in order to best answer the identified shortages. Research gap 1 (Knowledge Management --> Disclosure -> Effects) is treated in Section 4.2.2, research gap 2 (Knowledge Management --> Financial Effects) in Section 4.2.3 and research gap 3 (Disclosure --> Financial Effects) in Sections 4.3 and 4.4. A summary of the significant differences identified in the knowledge management practices and activities of the companies is given in Section 4.5. Section 4.6 summarizes the research objectives and the obtained findings.

Since none of the outlined relationships have been studied within intellectual capital, it is of interest to define if and how disclosure mediates the effects of the internal management practices, if these are concerned with an effective output in the respective disclosure practices and if these internal and external practices have a positive influence on financial effects. Of out-most importance is the utility of intellectual capital and innovation, internally and externally, as a tool of understanding business processes and the transformation of knowledge which the successful companies engage in. Second, it is also vital to identify the shortages of the less successful companies in order to formulate improvement propositions.

4.2 Internal Management Analysis

These first analyses are conducted on the data in order to study the intellectual capital management focus of the participating companies, as disentangled and causal knowledge resources and activities, based on actual measurement efficiency. This was previously defined as “research gap 1”, “Knowledge Management --> Disclosure -> Financial Effects”. The aim is to study the formulated profiles in detail on basis of the primary data (the questionnaire), to describe identified causal patterns of the successful firms and to identify the difference between profitable and less profitable companies' internal knowledge management with all variables outlined in the empirical model, cf. Figure 3.1.3.1.

In order to verify the theoretical expectations on the real life data, the hypotheses presented in Table 3.1.3.1 are tested in a latent class model which applies the three formulated “management profiles”, to answer the stated research question: **“How do firms attain higher financial effects through a differing internal management of intellectual capital and innovation, in relation to reporting?**”.

4.2.1 Building a Simulated Model and Assessing its Validity in Relation to the Base (Restricted) Model

Since the available data do not permit for analyzing the whole empirical model at once due to the greater amount of parameters than available observations, the next step is to simulate the primary data through replication by 100 times so that the number of observations equals 2900. This step is necessary so that the underlying structures can be estimated on the whole model simultaneously.

The latent class analysis technique allows for data replication without the loss of information or validity, since the underlying latent patterns remain the same. A latent model was therefore first fitted with the starting probabilities of the base model fitted on the non-replicated data set, cf. Section 4.1.3. The output of the regression and the generated probability plot are presented in Appendix 7, in Table A7c and Figure A7. As the results indicate, there is no difference between the models fitted on the original data sample and the simulated one (cf. Figures 4.1.3b and A7), except for greater AIC and BIC values due to a larger sample. In general, the latent class regression analysis technique is known for generating big Chi-squared values at even 1000 observations (Albert and Dodd, 2004), so the usual practice is to disregard the Chi-value when the sample is large. The rest of the statistical values, the Bayes Information Criterion (BIC) and the AIC (Akaike Information Criterion) are treated as required, where smaller values are preferred over greater ones. Parameter validity is claimed on basis of guides like t-values (z-scores) and computed p-values. It is noteworthy to mention that the statistical validity is not crucial for the outcome of the tests, since they are just indicative values which cannot be directly compared to the original data model. Instead, focus lies primarily and most importantly on the relation between the outcome of abnormal returns and the observed managerial practices, as well as on the difference between the formulated management profiles and their managerial characteristics.

4.2.2 Analysis Results by Managerial Profile

All the causal arrows illustrated in Figure 3.1.3.1 are tested and besides verifying the correspondence of the hypothesized latent structure empirically, the aim is to outline differences in effects based on research architectures and investment sizes, controlled through the formulated “management profiles”. The rest

of this section and sub-sections focuses on presenting identified commonalities and differences. Whereas the three hypothesized classes of management support the assumed risk traits in relation to the outcome and utility of knowledge, the next findings outline investment intensity and causal patterns identified in the three management types.

Each latent variable and its tested causal arrows is presented and discussed next, along with the identified investment intensity and hypothetical agreement, based on the results of the performed latent class analysis, cf. Section 4.2.1.

4.2.2.1 Strategy

The levels of investment in strategy are next summarized per management profile to highlight areas of preferred investments and their scope, cf. Table 4.2.2.1.

The “Pessimistic High Earners” had great interest towards issues that linked strategy to human capital (75 %) and technological capital (74 %). Process capital was strategically targeted to a moderate degree (49 %) and relational capital was not in strategic focus at all (24 %). Innovation was not directed through strategic objectives (0 %), but targeted strategic control of information disclosure performance level were rather intense, 62 % each. The strategic attention given to profitability was moderate (50 %).

Causal Relation	PHE	RHE	OLE	Question
Strategy --> Human Capital	75 %	89 %	58 %	1
Strategy --> Relational Capital	24 %	66 %	58 %	2
Strategy --> Process Capital	49 %	56 %	75 %	3
Strategy --> Technological Capital	74 %	78 %	75 %	4
Strategy --> Innovation	-	88 %	83 %	5
Strategy --> Disclosure	62 %	55 %	50 %	6
Strategy --> Performance	62 %	89 %	41 %	7
Strategy --> Profitability	50 %	55 %	75 %	8

Table 4.2.2.1 Highlights of Strategic Investment Intensity per Management Group

The “Optimistic Low Earners”, indicated high affinity towards strategic efforts aimed at developing human (58 %), relational (58 %), and especially process

(75 %) and technological capitals (75 %). Innovation was strategically targeted at a rather high intensity (83 %), whereas practices of disclosure were moderately prioritized (50 %). As previously postulated, their answers were favorably biased towards higher profitability levels than were actually registered. Issues concerning strategy to profitability were highly ranked (75 %). Performance was practically not a strategic concern (41 %), less than observed for the "Pessimistic High Earning" management group.

The "Realistic High Earners" directed strategy towards improvement of human (89 %) and technological capital (78 %) practices, and rather moderately towards process capital (56 %). Strategizing about relational capital was on the other hand highly ranked in this management group, 66 %. Innovation (88 %) was as prioritized, just like human capital and performance improvements (89 %). Disclosure practices were invested in to 55 %. In this group, the profitability focus was mixed, with moderate interest (55 %), which was previously found to also be linked to the actual realizations in market value.

Hypothetical Agreement

Hypothesis 2a states that a company's strategic focus is believed to affect its intellectual capital management. The findings of this analysis indicate that this is not completely true for the high earners, with the remark that the "Pessimistic High Earners" strategized less in relation to intellectual capital than the other two groups. The "Pessimistic High Earners" strategized the least in relation to relational, process and technological capitals, yet moderately in relation to human capital, at values just below the "Realistic High Earners". This finding is indicative of a greater importance of human capital for abnormal returns, although at low levels of strategic control.

Hypothesis 3 sustains that good decision-making practices directed towards innovation increase the chances of success. The results of this analysis allow for the rejection of this argument, because the "Pessimistic High Earners" are the only group who do not strategize in relation to innovation. Innovation is hence an output of intellectual capital, where the constituent capitals are managed.

Hypothesis 6 states that the performance of a successful company is positively affected by its investments in all analyzed inputs. Table 4.2.2.1 suggests that

strategy is only moderately affecting the performance aspects of the "Pessimistic High Earners" group.

4.2.2.2 Intellectual Capital

The internal causal relations of intellectual capital are summarized per management group to highlight prioritized areas, cf. Table 4.2.2.2.

Matters of human capital were directed towards relations to a high degree in the "Pessimistic High Earners" group (62 %). It seems that they considered relations to be an aspect best administered through the intervention of employee-matters, who are probably responsible for mapping and outlining feedback and targets. Process capital and innovation were not as important for human resources development as relational matters (36 % respectively 25 %). Disclosure was not mainly administered through the work force (37 %), which was not very concerned with performance and profitability topics either (50 %). The interest for processes was mainly administered through relations (80 %), which also had a very high influence on the companies' innovation-related activities (80 %), disclosure (80 %), profitability and performance aspects (93 % each). Hence, human relations and partnerships seem to be directing some of the internal development processes to a high degree. Processes were mainly aimed at improvements within the areas of innovations (87 %), disclosure and performance (93 % each), as well as profitability (87 %). The technological structures and improvements were intensively aimed towards improving the activities of human capital (100 %), innovation (80 %), performance (86 %), disclosure (93 %) and profitability (100 %). Technologies did not aim to improve processes, or relations very much (19 %).

The "Optimistic Low Earners" apply strategies in contradiction with all other groups: processes were highly prioritized employee-driven issues (78 %), just as innovation (88 %), whereas relations were a low priority (45 %). Disclosure, profitability and performance were given high priority levels of operation for the employees (89 %, 88 % and 78 %). In relations and partnerships, this management class attributed a pretty high importance to innovation, disclosure and profitability improvements (57 % each). The technological capital aimed to improve human capital activities (67 %), relations (74 %), processes (75 %) and innovation (57 %). No other area was prioritized, and in the cases of invest-

ments in processes the levels were between 80 to 100 % lower than in the "Pessimistic High Earners" class.

Causal Relation	PHE	RHE	OLE	Question
Human Capital --> Relational Capital	62 %	50 %	45 %	9
Human Capital --> Process Capital	36 %	41 %	78 %	10
Human Capital --> Innovation	25 %	41 %	88 %	11
Human Capital --> Disclosure	37 %	67 %	89 %	12
Human Capital --> Performance	50 %	50 %	78 %	13
Human Capital --> Profitability	50%	50 %	88 %	14
Relational Capital --> Process Capital	80 %	-	-	15
Relational Capital --> Innovation	80 %	-	57 %	16
Relational Capital --> Disclosure	80 %	-	57 %	17
Relational Capital --> Performance	93 %	-	-	18
Relational Capital --> Profitability	93 %	-	57 %	19
Process Capital --> Innovation	87 %	-	-	20
Process Capital --> Disclosure	93 %	-	-	21
Process Capital --> Performance	93 %	-	-	22
Process Capital --> Profitability	87 %	-	-	23
Technological Capital --> Human Capital	100 %	67 %	58 %	24
Technological Capital --> Relational Capital	19 %	74 %	42 %	25
Technological Capital --> Process Capital	-	75 %	50 %	26
Technological Capital --> Innovation	80 %	57 %	-	27
Technological Capital --> Disclosure	93 %	-	-	28
Technological Capital --> Performance	86 %	-	-	29
Technological Capital --> Profitability	100 %	-	-	30

Table 4.2.2.2 Highlights of Investment Intensity in Intellectual Capital per Management Group

The "Realistic High Earners" accorded moderate and low interest to relations (50 %), processes (41 %) and innovation (41 %). Issues of disclosure received the highest interest for the work force activities (67 %), while performance and profitability were just moderately prioritized (50 %). The areas of relations and partnerships, processes and technological matters directed towards other departments were not profitably aligned, often at levels of 30 – 50 % less than in

the "Pessimistic High Earners" group. Investments in the technological area aimed at slightly improving human capital (58 %), relations with customers and suppliers (42 %) and processes (50 %).

Hypothetical Agreement

The stated hypotheses which treat the intrinsic relationship of intellectual capital, hypothesis 2b and sub-hypotheses, indicate that some of the outlined paths are highly supported in the "Pessimistic High Earner" group. The effects of human capital on relational capital are the only ones of importance for the work force, supporting *hypothesis 2b1* and rejecting *hypotheses 2b2 and 2b3*. The successful companies' relations were found to affect their process capital and innovation positively, supporting *hypothesis 2b4 and 2b5*. The processes of the high-earners were also found to have a beneficial effect on the corporate innovation, allowing for the acceptance of *hypothesis 2b6*. Investments in technological capital were identified to be beneficial for human capital and innovation, but not for relational capital and processes, refuting hence *hypothesis 2b7*. The "Pessimistic High Earners" relational, process and technological capitals were positively affecting their innovation. In agreement with *hypothesis 2b8*, the three outlined areas of intangibles are highly and exclusively contributing to the companies' innovativity. The results further indicated that human capital-driven innovation is lower than in the other two groups. Hence, the successful companies practiced product, technological and process-driven innovations, as supported by the asymmetrical information theory.

In addition, it can be stated that *hypothesis 1a* is supported, with the exception of human capital. Investments in relational, process and technological capitals affect disclosure practices positively.

Hypothesis 5 is supported through the findings of Table 4.2.2.2, from where it can be understood that relational, process and technological capitals aim to make it easier for the successful companies to explain their managerial intentions. This is however not the case for human capital, where the knowledge embedded in employees is not often referred to when reporting.

Hypothesis 6 states that the performance of a successful company is positively affected by investments in all analyzed inputs. As indicated in the analyses of Table 4.2.2.2, human capital does not significantly contribute. The areas which

contribute to performance in the high-earning companies are relational, process and technological capitals.

4.2.2.3 Innovation

The levels of investment are next summarized per management group to highlight areas of preferred investments:

Causal Relation	PHE	RHE	OLE	Question
Innovation --> Disclosure	70 %	75 %	75 %	40
Innovation --> Performance	75 %	50 %	50 %	41
Innovation --> Profitability	75 %	50 %	50 %	42

Table 4.2.2.3 Highlights of Investment in Innovation per Management Group

The "Pessimistic High Earners" class accorded the somewhat less attention to innovating and disclosing about this (70 %) than the other groups. Innovation was instead directed towards development of performance and profitability (75 %), at a higher extent than in the other two groups.

The other management groups practiced innovation and disclosed it to a higher degree (75 %), while innovating for increased performance and profitability were just moderate investments kept at the 50 % level.

Hypothetical Agreement

Hypothesis 1b argued that innovation positively affects disclosure, which was found to not be the case for the "Pessimistic High Earners".

Hypothesis 6 states that the performance of a successful company is positively affected by investments in all analyzed inputs. As indicated in the analyses of Table 4.2.2.3, innovation contributes to performance.

4.2.2.4 Disclosure

The levels of investment are next summarized per management group:

Causal Relation	PHE	RHE	OLE	Question
Disclosure --> Performance	38 %	100 %	58 %	31
Disclosure --> Profitability	38 %	100 %	58 %	32

Table 4.2.2.4 Highlights of Investment Intensity in Disclosure per Management Group

The disclosure practices of the "Pessimistic High Earners" did not target performance and profitability issues to high levels (38 %), which primarily remains a strategic area as identified in previous findings.

The "Optimistic Low Earners" accorded a moderate interest towards disclosing performance and profitability matters (58 %), while the "Realistic High Earners" invested 100 % in these areas.

Hypothetical Agreement

Hypothesis 5 is not supported by the findings. Table 4.2.2.4 indicates that disclosure practices did not significantly improve the profitability or performance of the high-earners.

Hypothesis 6 states that the performance of a successful company is positively affected by investments in all analyzed inputs. As indicated in the analyses of Table 4.2.2.4, this is not the case for disclosure practices.

4.2.2.5 Performance

The levels of investment are next summarized per management group to indicate the preferred level of investment:

Causal Relation	PHE	RHE	OLE	Question
Performance --> Profitability	46 %	50 %	58 %	33

Table 4.2.2.5 Highlights of Investments in Performance Directed towards Profitability per Management Group

Performance was not a highly prioritized area in the "Pessimistic High Earners" group (46 %). The "Optimistic Low Earners" class has a slightly more fitting perception of their performativity than their profitability, which reached an ade-

quate level of 58 %. The “Realistic High Earners” were just as well informed as about their performance capacity as about their profitability, and moderately accounted this to 50 %, just as their actual abnormal earnings levels.

Hypothetical Agreement

Hypothesis 7 states that the market value (abnormal returns) of a successful company is positively affected by investments in all analyzed inputs. Table 4.2.2.5 indicates that performance is moderately impacting profitability in the successful companies.

Furthermore, the results support the hypothesized division into the three types of managers, where their pessimistic, realistic and optimistic traits also can be observed in their opinions of performance. The “Pessimistic High Earners” indicated that their performance was affecting their profitability to the lowest degree and the “Realistic High Earners” to a moderate degree. The “Optimistic Low Earners” believed that their performance was indicative of their profitability to the greatest extent. Hence, the managers’ perceptions of performance (and nevertheless profitability) reflect the risk attributed to their respective classification, where the “Pessimistic High Earners” were the most risk averse and the “Optimistic Low Earners” were the most risk seeking group in relation to their actual realizations.

4.2.2.6 Correspondence of the Empirical Model

Comparing the Base (Restricted) Model to the Full Model

The empirical model described in Figure 3.1.3.1 was fitted to the replicated data to test the various hypotheses of interest and to verify if it is a good explanation given its utility assumptions. The issues described in the identified research gaps, cf. Section 2.5.1, refer to difficulties in capturing and measuring the effects of knowledge resources and activities, due to the fact that these processes and investments often are idiosyncratic. The knowledge management of a firm, herein strategizing, is considered to be responsible of sustaining the development focus on basis of value communication, knowledge sharing and conducting corporate and personal development simultaneously, as well as to substitute knowledge with intellectual capital resources and activities in order to

turn intangible resources into value streams. Furthermore, the strategizing capacity of a firm is often not related to corporate outcome based on actual measurements, as the intellectual capital theory prescribes. Third, by including the intellectual capital resources as disentangled objects with attributes, related activities and their causal effects can be studied for correspondence in relation to the strategic factors of interest.

With these shortcomings in mind, the base model described in Figure 4.1.3b was extended with the manifest variables of interest and fitted to the survey data in three stages (the output of the regressions is presented in Appendix 7, in Tables A7d, A7e and A7f. Three stages were required since the model could not be fitted all at once[15]. This method is valid for the research scope because the class division criteria have not changed, and the results are complementary.

Figure 4.2.2.6 is the resulting predicted probability plot of the calculated parameters and estimates of the whole empirical model[16], assembled on basis of the regression results of the three analytical stages.

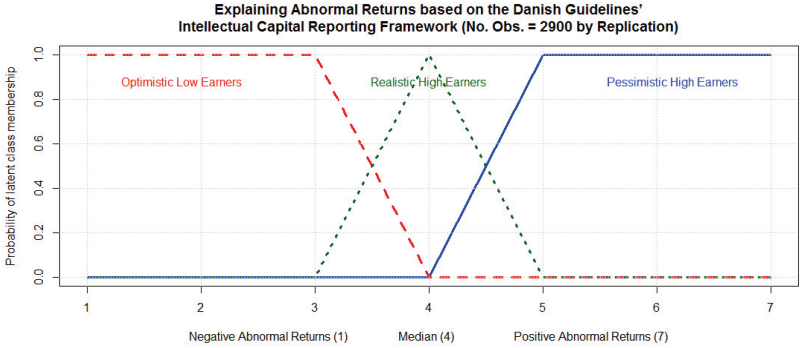


Figure 4.2.2.6 Explaining Abnormal Returns Based on the Empirical Model

15 The maximum model could not contain all variables due to the exhaustive computational resources required for this operation. The maximum sized model that could be fitted had a BIC of 68324, rendering the three fitted sub-models better. Since the structure of the management profiles is controlled and unaltered and most models with other cluster groupings than by the 3 suggested clusters had much greater values, sometimes even double in AIC and BIC, the chosen classification is the most adequate and this method was the best available analysis choice.

16 The estimates obtained in the three stages of analysis were assembled so that the total effects could be plotted. The individual coefficients, residuals and variables are the original values obtained in the respective regressions presented in Tables in Appendix 7, aggregated in the predicted probability plot of the calculated parameters to offer a complete view of the empirical model's correspondence.

The results indicate that the suggested empirical model (cf. Figure 3.1.3.1) explains the hypothesized relationship between the observed constructs well. The topics raised in the survey describe hence the relation to the generated abnormal market returns after adjusting for the mean industrial returns with a clear distinguishment in performance outlined between the three proposed latent classes of management. The measurements are based on the hypothesized causal effects given the estimated direction of tested activities and investments.

The usefulness of knowledge and its returns is clearly delimited by the actual achievements of the respondent companies. The “Optimistic Low Earners” accounted for abnormal return values lower than the median, “Realistic High Earners” positioned around the median with both positive and negative slopes depending on achievements, and the “Pessimistic High Earners” are the optimal management group, with values above the median.

Survey Scale Validation

The survey scales were validated against criteria of relevance. Exploratory factor analysis can be used for scale validation purposes with great advantage. The specified effects were grouped by survey topic and a reliability analysis was performed on each one of them. Within social sciences, scales can be considered valid when the Cronbach’s alpha value is above 0.60 (Hensley, 1999). The more common practice of a cutoff of 0.7 was applied in this study, where validity was assessed as recommended for validity of scales in research (Hatcher, 1994; Tavakol and Dennick, 2011).

The standardized Cronbach’s alpha value registered for the questionnaire scales applied in this study are above 0.7, being thus scientifically acceptable. The results of the analyzes are presented in Table 4.2.2.6 and indicate that the survey scales are valid, and hence also suitable to be used in further studies. The details of the questionnaire can be found in Appendix 1, along with the sources from where the questions have been adapted and modified, where relevant.

Scale	Cronbach's Alpha Based on Standardized Items
Strategy	0.811
Human Capital	0.700
Relational Capital	0.877
Technological Capital	0.860
Process Capital	0.876
Innovation	0.899
Disclosure	0.891
Performance	0.932
Profitability	0.882

Table 4.2.2.6 Primary Data Scale Validation Analysis

The applied latent class regressions are supported by the probability distribution of the collected primary data. This analysis technique is a very useful method of categorizing latent fuzzy structures and the results are highly significant. The simulation technique used is common within this sort of analysis and helped reach insights within the valuable opinions of the respondent managers. The performed analyzes of variance are suitable tools of estimating differences between the groups of interest, and since no linear regression is involved, they are highly reliable. The rank measures applied throughout the analyses and in connecting the data types of primary and secondary nature are indicative and adequate for the scope of distinguishing between the groupings of interest.

4.2.3 Value Creation through Innovation

This analysis part incorporates the results of corporate decision-making and actual knowledge resource and activity management, where the effects of these practices are strongly theorized upon as profitable. The literature of process management does however not often distinguish if innovation type (created or acquired) has any relation to firm performance or the mode in which innovation is employed (created or leased).

In order to outline differences in competitive advantages due to variations of resource constellations, the effects of knowledge peaks (open or secret innova-

tion) and asymmetrical information (internally-developed or leased/acquired innovations) are next evaluated in relation to profitability and competitive positioning on the market. These tests target research gap 2, cf. Section 2.5.1, "Knowledge Management --> Financial Effects", to answer the question: "**Are there any benefits from asymmetrical information or innovation type given intellectual capital's assumed idiosyncrasy?**".

4.2.3.1 Innovation Types and Their Effects

A dedicated part of the survey targeted innovation practices in terms of its development (in secrecy or disclosed), along with the perceived profitability of in-house innovation development vs. bought or leased innovation. The median for innovating in secret vs. disclosing innovation is 3, indicating that more innovations are disclosed than held secret. The categorical variable formulated is based on values greater than or equal to the median, "Disclosing Innovation", vs. lower than the median "Innovating in Secret". Almost a third of the respondents indicated that they were "Innovating in Secret" (8 respondents | 28 %) compared to more than two-thirds who prefer "Disclosing Innovation" (21 respondents | 72 %). The respondents who considered that in-house developed innovations are profitable, "High Profitability of In-house Innovation" (18 respondents | 62 %), were slightly over-represented in comparison to those who believe that in-house innovation is not very profitable, "Low Profitability of In-house Innovation" (11 respondents | 38 %). Slightly more than half of the respondents considered that bought or leased innovations are profitable "High Profitability of Bought/Leased Innovation" (16 respondents | 55%) compared to the "Low Profitability of Bought/Leased Innovation" (13 respondents | 45 %).

4.2.3.2 Innovation Trends by Management Profile

A latent class analysis was applied to the outlined issues of innovation. The regression output is presented in Appendix 7, Table A7g. In agreement with the previous analyzes, the probability odds of the management classes remained similarly distributed along the abnormal returns ranks, with the high earners present in the upper profitability ranks and the low earners in the lower profitability ranks. However, the probability of disclosing innovation decreases negatively with the profitability level. The least successful companies disclosed

the most about their innovation, while the most successful ones the least, cf. Figure 4.2.3.2.

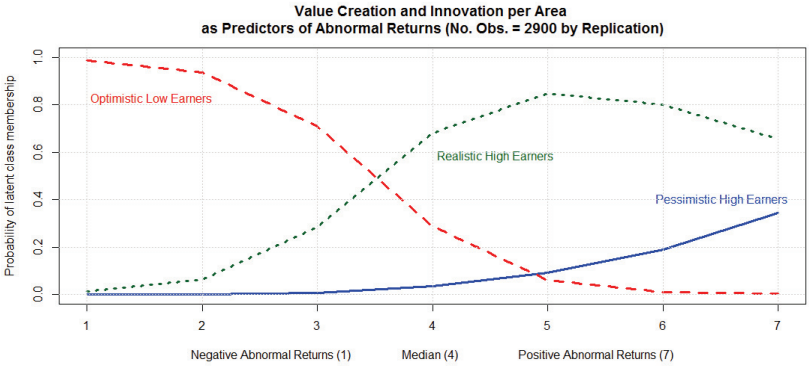


Figure 4.2.3.2 Value Creation and Innovation as Predictors of Abnormal Returns

The levels of investment in strategy are next summarized per management profile to highlight the areas of preferred investments and their direction, cf. Table 4.2.3.2.

Causal Relation	PHE	RHE	OLE	Question
Profitability of bought/leased innovations	33 %	57 %	58 %	34
Innovation --> Strategy	67 %	86 %	50 %	35
Innovation --> Human capital	33 %	93 %	66 %	36
Innovation --> Relational Capital	33 %	79 %	24 %	37
Innovation --> Process Capital	-	93 %	67 %	38
Innovation --> Technological Capital	-	100 %	67 %	39
Innovation --> Disclosure	33 %	79 %	75 %	40
Innovation --> Performance	-	93 %	41 %	41
Innovation --> Profitability	-	93 %	42 %	42

Table 4.2.3.2 Highlights of Value Creation and Innovation per Management Group

The “Pessimistic High Earners” were the major group who preferred inhouse innovation to buying/leasing innovation (33 %). Another interesting fact is that innovation directed their strategy development to a high degree (67 %), whilst the investment intensity in innovations directed towards human, relational and reporting was rather low (33 % for each area). A plausible explanation of their

low interest towards innovating operational processes, technologies, performance issues and profitability is that innovation is an output of intellectual capital, as previously hypothesized and supported in the first part of the analysis, cf. Tables 4.2.2.2 and 4.2.2.3. Their three major traits are hence: 1) innovation is mainly going into strategy, 2) innovation is an output of intellectual capital and 3) innovation towards disclosure is poor, indicating a tendency of secrecy towards reporting practices externally.

The "Realistic High Earners" acquired or leased innovations rather positively (57 %), and were the group most inclined to disclose in-house innovations (79 %) instead of keeping them secret. Their innovativity is an important driver of strategic direction (86 %), performance (93 %) and profitability (93 %). Their investments in innovation in the areas of intangibles are the highest in the group: technologies (100 %), human (93 %), process (93 %) and relational capital (79 %), indicating a strong influence of innovation in these areas.

The "Optimistic Low Earners" acquired or leased innovation to a favorable degree (58 %) and happily disclosed innovations (75 %) instead of keeping them secret. Their innovativity did not direct strategic development more than to a moderate degree (50 %). Their investments in innovating intellectual capital were rather high: human capital (66 %), process and technological capitals (67 %), whilst the relations and suppliers were prioritized to a modest level (24 %). Performance and higher profitability were not top priority issues (41 respectively 42 %). These results are indicative of a tendency to employ disclosure as a mechanism of value generation, and it does not seem to be very profitable.

Hypothetical Agreement

Hypothesis 4 sustained that the innovative capacity of a company has positive effects on its performance, since competitive advantages can be obtained on basis of asymmetrical information and intangible investments in R&D and process development. Table 4.2.4.2 indicates that the successful companies of this study mainly innovated in secrecy. These results are however closely related to the previous findings that intellectual capital resource constellations were mainly supported in the "Pessimistic High Earners" class, and not in the other groups, cf. Table 4.2.2.2. Hence, a total management of all the disentangled in-

tellectual capital types and a certain reluctance towards disclosing the mainly in-house generated innovation are profitable traits.

4.3 External Disclosure Analysis

This analysis aims to determine if external information is a good representation of internal processes and what shortages may consist of. This research scope was defined in research gap 3, cf. Section 2.5.1. It will be estimated if uniqueness through reporting is profitable and if it can be observed in financial outcome on basis of disclosure practices, to answer the research question "Does disclosure offer an accurate representation of that which is organized, or is such information conditioned, and in which way?".

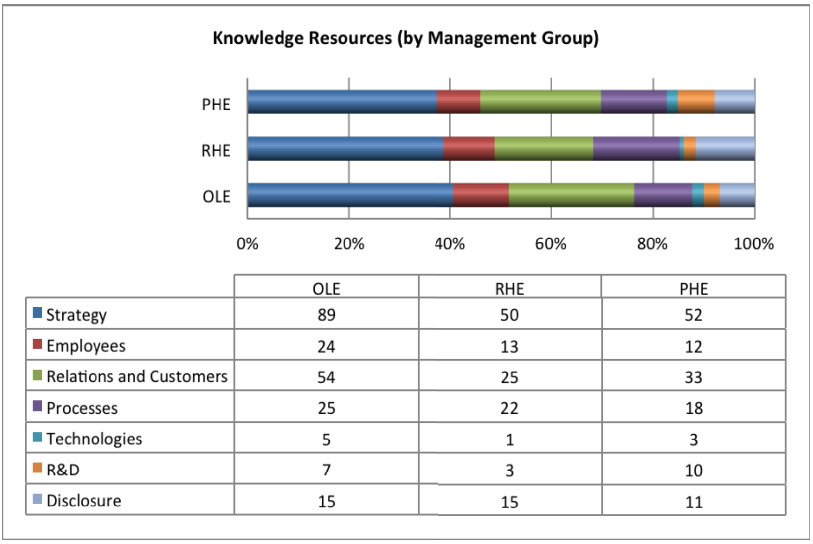
4.3.1 Key Term Analysis Based on Disclosure Indices

Mouritsen et al. (2002) write that when organizations define their future development intentions in intellectual capital statements, they are accounting for future value. The authors outline three development phases, namely of incentives, challenges and key indicators as rather common in most firms which are associated with detailed intangible management. These aspects cover the production of narratives, which communicate the company's aim to increase or create value-added, through definition of managerial challenges in relation to the important intangible resources, initiatives taken to resolve these identified challenges and the development of key indicators for detailed management of these resources and their reporting. The formulated coding map, previously described in Section 3.2.2.1, contains these aspects, as well as the different types of knowledge resources (strategy, human capital, relational capital, process capital, technological capital, innovation and disclosure) for easy linkage to the internal management analysis results.

The coding map is in this section operationalized for the data mining analysis. It consists of 800+ items. The procedure seeks to match the targeted terms specified in Appendix 3 in the contents of the annual reports. The documents are searched for the occurrence of the stated key terms and relevant term combinations. When a match is found, it is registered in order to form the indices of disclosure. The group division of the companies previously applied is herein

again applied in deepening data mining analyzes. The annual reports of the respective companies were grouped according to the labels “Pessimistic High Earners”, “Realistic High Earners” and “Optimistic Low Earners” to reflect their market value achievements. The relevant key indicators and their linguistic meaning are verified and sought for in the contents of the disclosed information. The most plausible expectation is to find the same traits of disclosure as identified in the survey analyses of Sections 4.2.2 and 4.2.3. The “Pessimistic High Earners” are most likely expected to disclose least items, the “Realistic High Earners” are likely to disclose moderate amounts of information and the “Optimistic Low Earners” are assumed to disclose the most varying and high-frequency information.

In total, 1605 items were identified in the annual reports. The total disclosure is represented as average occurrence of items reported per company. If a company was matched with a key term, one occurrence was registered. The disentangled knowledge resources (IC Model variables) are hereby presented. The “Realistic High Earners” disclosed the fewest average items per represented company (129) and the “Pessimistic high Earners” a slightly higher amount (139).



	OLE	RHE	PHE
Strategy	89	50	52
Employees	24	13	12
Relations and Customers	54	25	33
Processes	25	22	18
Technologies	5	1	3
R&D	7	3	10
Disclosure	15	15	11

Figure 4.3.1 Identified Knowledge Resources (by Management Profile)

The “Optimistic Low Earners” disclosed at the highest frequency (219), hence most optimistically. It is yet obvious that the “Optimistic Low Earners” disclosed at an almost double frequency than the other two groups, cf. Figure 4.3.1. Nevertheless, the “Optimistic Low Earners” disclosed a lot more strategic terms, plausibly as future aspirations of creating value.

4.3.1.1 Validating the External Reporting Analysis

Analyzes of variance were performed for the disclosed items identified in the key factor analysis by the value of the assigned rank. This step aims to ensure statistical validity of the findings, before relating them to the primary data.

Variable Level	Management Profile
Entangled Knowledge Resources – IC Model Variables.	No
Disentangled Knowledge Resources – IC Model Variables	Yes*

* Significance at Alpha 0.7 and confidence level of 95 %

Table 4.3.1.1 ANOVAs of Disclosure Trends per Management Profile

The results indicate that “entangled knowledge resources”, i.e. strategy, intellectual capital, innovation and disclosure do not differ significantly across the management profiles, cf. Table 4.3.1.1. There is thus no significant discrepancy between the overall disclosure trends of the analyzed companies in the annual reports at the highest level of analysis.

On a lower level though, i.e. at the individual disentangled level of intellectual capital (strategy, human-, relational-, process-, technological capital, innovation and disclosure), the analyzes indicate that the formulated managerial groups' reporting varied significantly.

The outputs of the Analyses of Variance are presented in Appendix 8.

4.4 Linking the Internal Management to External Disclosure Practices – How Much Less, if, Is Disclosed Externally than Managed Internally?

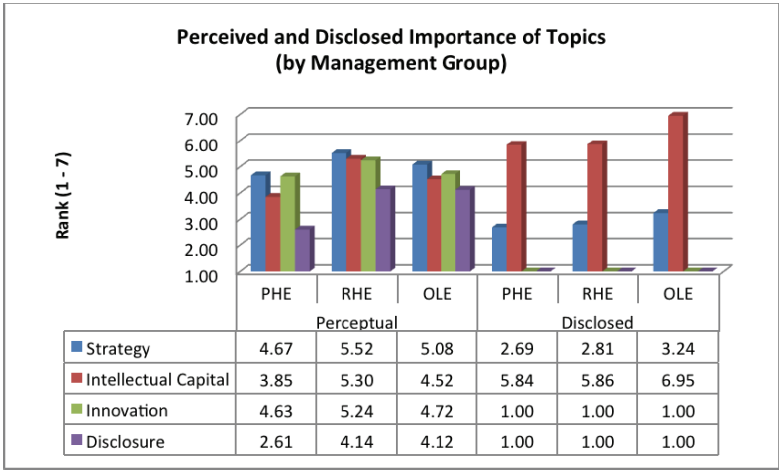
This concluding sub-section summarizes and presents the linkages between the primary and secondary data, in terms of differences and similarities between the observed ranks across the studied areas. It treats one of the main concerns of this thesis, namely if and how disclosure moderates the internal management in its translation into effects on the market, given internal practices of intellectual capital management and innovation.

Of utmost importance is hence to define "How much less, if, is disclosed externally than managed internally?", at the entangled and disentangled intellectual capital level among the identified managerial profiles.

Disclosure ranks were next formulated based on the frequency of the identified key items, within the range of 1 to 7 to match the information collected in the questionnaire and to later on be linked to the results of the survey. In agreement with the recommendations made in Wang (2013), the range of the partition of disclosed items is considered and applied to define the relevant relative boundaries. The range of disclosed items per company lies within 2 to 50 items for all defined management groups. Each occurrence is therefore attributed its corresponding rank depending on its value in relation to the floor and top values of the frequency interval, as well as belonging to knowledge resource class.

4.4.1 Differences at the Entangled Level

A summary is next presented over both the perceptual and disclosed values, per main analyzed topic, in the applied Likert scale form. The values range between 1 and 7 just as used in the ranking level of both the survey and content analysis. The aim is to hence compare the investments by management profile, cf. Figure 4.4.1 across the two data sources and later their relation through a direct comparison.



	PHE	RHE	OLE	PHE	RHE	OLE
	Perceptual			Disclosed		
Strategy	4.67	5.52	5.08	2.69	2.81	3.24
Intellectual Capital	3.85	5.30	4.52	5.84	5.86	6.95
Innovation	4.63	5.24	4.72	1.00	1.00	1.00
Disclosure	2.61	4.14	4.12	1.00	1.00	1.00

Figure 4.4.1 Perceived and Disclosed Importance of Topics (by Management Profile)

The area which is the most different in terms of internal management and reporting is intellectual capital. The smallest difference was identified in terms of reported innovation and disclosure aspects, where the management profiles did not differ in reporting, just in internal management. Overall, strategy and intellectual capital are the top issues managed and reported, while innovation and disclosure are investments which are mostly kept in-house.

The differences between internal management and reporting were found to be statistically significant[17]. These are next presented and discussed.

The differences between ranks are next computed in order to answer the question "How much less, if, is disclosed than managed internally?", per management profile. The differences between internal management and reporting were found to be statistically significant across the identified management profiles (cf. ANOVA output in Appendix 9, Table A9c).

The differences per profile are hereby next presented in Table 4.4.1. Strategy, innovation and disclosure are all disclosed less about than managed internally. Innovation has the greatest average negative difference (-55 %), indicating a strong tendency of secrecy in external disclosure. Reporting about disclosure

17 Results of the ANOVA between perceived and disclosed means indicate that there is a significant difference between the management profiles at Alfa 0.05 (i.e. 95 % confidence level).

practices themselves is also less mentioned than it is organized and administered internally (-37 %). Nonetheless, strategy is also less disclosed about than internally managed (-31 %).

	PHE	RHE	OLE	Effect (All Profiles)	
		PANEL A			
	Difference in rank means cf. Figure 4.4.1				
Strategy	-1.98	-2.71	-1.84	-	
IC	1.99	0.56	2.43	+	
Innovation	-3.63	-4.24	-3.72	-	
Disclosure	-1.61	-3.14	-3.12	-	
		PANEL B			
	Difference in percentages per management profile				*Difference in percentages per topic*
Strategy	-28%	-39%	-26%	-	-31%
IC	28%	8%	35%	+	24%
Innovation	-52%	-61%	-53%	-	-55%
Disclosure	-23%	-45%	-45%	-	-37%

Table 4.4.1 Summary: How Much Less, if, Is Disclosed Externally than Managed Internally? (per Management Profile at the Entangled Level)

When intellectual capital is entangled, it can be observed that its overall importance is positive in reporting compared to what is managed internally. Hence, more attention is given to its reporting, making it the sole source which is intensely (and positively) reported about in relation to its internal management. All management profiles disclose more intellectual capital on average than they manage (24 % on average, cf. Table 4.4.1). The difference between groups lies within the reporting intensity, where the Pessimistic High Earners enhance their internally managed intellectual capital with 28 % in reporting, yet being the sole group who manages all types of capitals (cf. Table 4.2.2.2). The Realistic High Earners disclose the least different about what they manage internally in terms of intellectual capital (8 %) and they manage a mixture of intellectual capitals that is more abundant than the Optimistic Low Earners (cf. Table 4.2.2.2). The Optimistic Low Earners disclose the most differently about their intellectual capital (35 %) in relation to its internal management, which is the least diverse of all identified groups (cf. Table 4.2.2.2).

4.4.2 Differences at the Disentangled Level

The differences between internal management and reporting were found to be statistically significant across the identified management profiles, at the disentangled intellectual capital level, cf. ANOVA output in Appendix 9, Table A9c and Table 4.4.2. The scope is to answer the same question: "How much less, if, is disclosed externally than managed internally?" per management profile, at the disentangled level.

When broken down into the outlined four intellectual capital types, it can be stated that all types of intellectual capital are prominent in disclosure. They are the sole sources which are intensely (and positively) reported about in relation to their internal management. Worthwhile to mention is the fact that only the Pessimistic High Earners group managed all these types of capitals (cf. Table 4.4.2), but all management profile groups disclose more on average than manage (24 % on average, cf. Table 4.4.1). Process capital is disclosed the most about (30 % more than managed). Relational capital is disclosed to 24 % more than internally managed, while human and technological capitals are also more disclosed about than managed internally, to 18 %.

Table 4.4.2 clearly indicates the differences per management profile, where the Pessimistic High Earners disclose the most in the process capital area (43 %), followed by relational capital (25 %) and lastly by human and technological capitals (16 %). Realistic High Earners report the most about relational capital (11 %), followed by process capital (9 %), and by human and technological capitals (5 %).

Optimistic Low Earners disclose the most in relation to what they manage internally, with small differences in the preferences across the intellectual capital types. Process capital is most intensely disclosed about (39 %), followed by relational capital (37 %) and human respectively technological capitals (31 %).

Noteworthy is the fact that across all areas, the Pessimistic High Earners disclose as they manage (0 % average difference per group), whereas the Realistic High Earners disclose too little (-16 %), and the Optimistic Low Earners disclose the most (2 %), cf. Table 4.4.2. Yet, all groups disclose more intensely than they manage internally. Again, process capital was most intensely disclosed about, with the exception of Realistic High Earners who preferred to report most about relational capital, which only ranked second in disclosure

	PHE	RHE	OLE	Effect (All Profiles)	
		PANEL A			
		Difference in rank means cf. Figure 4.4.1			
Strategy	-1.98	-2.71	-1.84	-	
Human Capital	1.14	0.38	2.16	+	
Relational Capital	1.74	0.76	2.60	+	
Process Capital	3.04	0.64	2.71	+	
Technological Capital	1.14	0.38	2.16	+	
Innovation	-3.63	-4.24	-3.72	-	
Disclosure	-1.61	-3.14	-3.12	-	
		PANEL B			
	Difference in percentages per management profile				*Difference per topic*
Strategy	-28 %	-39 %	-26 %		-31 %
Human Capital	16 %	5 %	31 %		18 %
Relational Capital	25 %	11 %	37 %		24 %
Process Capital	43 %	9 %	39 %		30 %
Technological Capital	16 %	5 %	31 %		18 %
Innovation	-52 %	-61 %	-53%		-55 %
Disclosure	-23 %	-45 %	-45 %		-37.00%
Average difference	**0 %**	**-16 %**	**2 %**		**-5 %**

Table 4.4.2 Summary: How Much Less, if, Is Disclosed Externally than Managed Internally? (per Management Profile at the Disentangled Level)

across the Pessimistic High Earners and Optimistic Low Earners groups. All groups reported least about human and technological capitals, which had the same rank across the groups, although at different intensity levels. Optimistic Low Earners reported a lot more about human and technological capitals, although their internal management comprised the fewest intellectual capital topics, cf. Table 4.2.2.2.

4.5 Summary of the Significant Differences between Internal Management and External Disclosure Practices

Table 4.5a summarizes the statistical significance of the performed analyses of variance tests upon the data. The table clearly indicates that the differences across levels (entangled vs. disentangled) are consistent by managerial profile.

	Management Profiles
KM vs. Disclosure Analysis (Entangled IC)	Yes (cf. Table 4.4.1)
KM vs. Disclosure Analysis (Disentangled IC)	Yes (cf. Table 4.4.2)

Table 4.5a Summary: Significant Differences in Management and Disclosure Across the Studied Management Profiles

Hence, these findings are good news: success is highly dependent on the quality of management, herein expressed as different management profiles based on achievements. As the resource- and knowledge-based frameworks suggest, unique capabilities are indispensable. Nevertheless, asymmetrical information yields different returns, as observed in the secrecy tendency of innovation.

The formulated intellectual capital model is hence useful for increasing the understanding about what, how and why knowledge is managed and innovated upon, across all employed data sources.

The characteristics of the respective management profiles are next outlined in Table 4.5b, to pinpoint the most important differences.

Strategy, innovation and disclosure had the smallest difference in percentages in the Pessimistic High Earners group, cf. Table 4.4.2. Yet, they also had the smallest ranks, cf. Table 4.4.1. This fact means that the Pessimistic High Earners reported the least about these areas externally, but also had the smallest differences between internal management and reporting practices.

When broken down into the outlined four intellectual capital types, all types of intellectual capital are prominent in disclosure. They are the sole sources which are intensely (and positively) reported about in relation to their internal management. Worthwhile to mention is the fact that only the Pessimistic High Earners group managed all these types of capitals (cf. Table 4.2.2.2), but all management profile groups disclose more on average than manage (24 % on average, cf. Table 4.4.1). Process capital is disclosed the most about (30 % more than managed). Relational capital is disclosed to 24 % more than internally managed, while human and technological capitals are also more disclosed about than managed internally (18 %), cf. Table 4.4.2.

Strategy, innovation and disclosure are all disclosed less about than managed internally. Innovation has the greatest average negative difference (-55 %), indicating a strong tendency of secrecy in external disclosure. Reporting about disclosure practices themselves is also less mentioned than it is organized and administered internally (-37 %). Nonetheless, strategy is also less disclosed about than internally managed (-31 %), cf. Table 4.4.2.

The Pessimistic High Earners disclose as they manage (0 % average difference per group), whereas the Realistic High Earners disclose too little (-16 %), and the Optimistic Low Earners disclose the most (2 %), cf. Table 4.4.2.

Table 4.5b Summary of Internal Management vs. External Disclosure Trends per Management Profile

4.5.1 The Successful Companies' Internal Management Practices

Table 4.5.1a presents the successful companies internal management profile. The successful companies capitalized on intellectual capital, where mainly the relational, process and technological capitals were emphasized. Human capital and strategizing played a moderate role in the performance of the companies.

Intellectual capital and its output innovation were the main abnormal returns generating investments. While human capital was not a main source of innovation, innovation had a major impact on the strategy of the high-earning companies. The successful companies of this study innovated in secrecy rather than disclosing it.

Causal Relation	Importance
Human Capital --> Relational Capital	High
Relational Capital --> Process Capital	High and exclusive
Relational Capital --> Innovation	High
Relational Capital --> Disclosure	High
Relational Capital --> Performance	High and exclusive
Relational Capital --> Profitability	High
Process Capital --> Innovation	High and exclusive
Process Capital --> Disclosure	High and exclusive
Process Capital --> Performance	High and exclusive
Process Capital --> Profitability	High and exclusive
Technological Capital --> Human Capital	High

Technological Capital --> Innovation	High
Technological Capital --> Disclosure	High and exclusive
Technological Capital --> Performance	High and exclusive
Technological Capital --> Profitability	High and exclusive
Innovation --> Performance	High
Innovation --> Profitability	High
Innovating in secrecy	High

Table 4.5.1 The Successful Companies' Internal Management Practices Profile

It is hence recommended, on basis of the findings of this study, that companies which aspire to improve their financial effects and optimize their internal management processes, follow the successful traits listed in the table above.

4.5.1.1 Summary of Hypothetical Correspondence

The hypotheses stated in Table 3.1.3.1 are discussed in this sub-section to explicitly discuss their correspondence. They are discussing the assumptions of the empirical model, cf. Figure 3.1.3.1.

The analyses covered all research gaps as they guided the analysis steps. Research gap 1 was specifically analyzed in Sections 4.1, research gap 2 in Sections 4.2.2 and 4.2.3 and research gap 3 in Section 4.3 and especially 4.4.

Support was found for the stated hypotheses, mainly for the most successful group of companies, the "Pessimistic High Earners". These companies' internal management was the most correspondent to the stated structure of the empirical model, whereas the other two management groups' correspondence with the model decreased along with their levels of positive abnormal returns. Hence, the higher the correspondence with the model, the higher the generated positive abnormal returns in relation to competitors from the same industry and nevertheless, the higher utility of knowledge management.

It is worthwhile to mention that the successful companies did not achieve a perfect correspondence with the stated empirical model. This section discusses which of the areas were found of importance, while presenting the observed hypothetical support. The results did not only allow for verifying hypotheses, but also for obtaining measures of the intensity of the companies' investments in

the raised areas. The hypothetical correspondence is first summarized for empirical support and new findings and divergences are discussed thereafter. Table 4.5.1.1 presents the summary over the areas of analysis where the respective hypothetical support was identified.

Confirmatory Hypotheses	Identified Support	Notes
H1a. Investments in human, relational, process and technological capitals affect the practices of disclosure positively. Relational and human capitals represent the intangible activities which the firm engages in, technologies are resources which support the other activities, whilst processes are optimizing effects.	Table 4.2.2.2 (Accepted)	Except for HC
H1b. The practices of innovation affect the reporting practices of a company, where the control, reporting and production systems play an important role in the attainable effects and their measurement.	Table 4.2.2.3 (Accepted) Table 4.2.4.2 (Rejected)	
H1c. Innovation is herein considered an outcome of the activities and resources managed in the corporate systems (human, relational, process respectively technological capitals) and correspondence of this "path" indicates that the company's performance and control systems are well-developed and optimized.	Table 4.2.2.2 (Accepted)	Except for human capital
H2a. A company's strategic focus is believed to affect its intellectual capital management, as well as its capacity of translating knowledge into intangible resources, activities and effects.	Table 4.2.2.1 (Rejected)	
H2b. The indications made in the Danish Guidelines of Intellectual Capital Reporting (2003) are herein applied as follows to test the internal causal relations between the individual disentangled intellectual capital types:		
1. human capital activities affect the relational capital positively	Table 4.2.2.2 (Accepted)	
2. human capital activities affect processes positively	Table 4.2.2.2 (Rejected)	
3. human capital activities positively affect the innovating results of a company	Table 4.2.2.2 (Rejected)	
4. relational capital activities affect processes positively	Table 4.2.2.2 (Accepted)	
5. relational capital activities affect the innovation ability positively	Table 4.2.2.2 (Accepted)	
6. process capital activities affect the corporate innovation positively	Table 4.2.2.2 (Accepted)	
7. technological resources such as IT systems and hardware affect the human capital and relational capital activities		

positively, as well as the processes and innovation ability of a company since they support more efficient and structured operations, control systems, information management and documentation ability	Table 4.2.2.2 (Rejected)	Except for human capital and innovation
8. investments in human, relational, process and technological capitals affect the existing degree of innovation positively	Table 4.2.2.2 (Accepted)	Except for human capital
H3. Good decision-making practices directed towards innovation increase the chances of success.	Table 4.2.2.1 (Rejected)	
H4. The innovating capacity of a company has positive effects on its performance. This hypothesis supports the modern intellectual capital theory, where the strategizing stream of intellectual capital is profitable for business and where competitive advantages can be obtained on basis of asymmetrical information, knowledge management and intangible investments in R&D and process development.	Table 4.2.2.3 (Accepted)	
H5. High disclosure efforts make it easier to reflect managerial initiatives, challenges and internal management adequately. The shareholders, investors and analysts are provided with detailed information, which explain the company's market value and future intentions better.	Table 4.2.2.2 (Accepted) Table 4.2.2.4 (Rejected)	Except for human capital
H6. The performance of a company is positively affected by investments in all specified inputs.	Table 4.2.2.1 (Rejected) Table 4.2.2.2 (Accepted) Table 4.2.2.3 (Accepted) Table 4.2.2.4 (Rejected)	Except for human capital
H7. The market value (abnormal returns) of a company is positively affected by investments in all outlined inputs.	Table 4.2.2.1 (Rejected) Table 4.2.2.2 (Accepted) Table 4.2.2.3(Accepted) Table 4.2.2.4 (Rejected) Table 4.2.2.5 (Rejected)	Except for human capital

Table 4.5.1.1 – Summary of Hypothetical Agreement

Hypothesis 1a is supported, with the exception of human capital, cf. Table 4.2.2.2. Investments in relational, process and technological capitals affect the practices of disclosure positively. ***Hypothesis 1b*** argued that innovation positively affects disclosure, which was found to not be the case for the "Pessimistic High Earners", cf. Table 4.2.2.3.The successful companies prefer to innovate in secrecy rather than disclosing their innovations, cf. Table 4.2.4.2. Furthermore, ***hypothesis 1c*** is supported, showing that the intellectual capital of

the successful companies is transformed into innovation, which is an output of the internal knowledge management.

Hypothesis 2a: Table 4.2.2.1 shows that the strategic focus of the successful companies was directed towards its intellectual capital management, yet at moderate levels and somewhat lower than in the other two groups. An important finding herein is the fact that while the "Pessimistic High Earners" invested less in strategizing in relation to relational, process and technological capitals than the other two groups, they were moderately strategizing in relation to human capital, indicating a certain preference towards this area. The "Pessimistic High Earners" invested in strategies aimed at all areas except for innovation. In a later analysis, it was found that their innovativity is moderately directed towards improving strategy instead, cf. Table 4.2.3.2, in difference from the other two groups which both strategize innovation and innovate their strategies. Hence, their strategizing capacity did not have the highest correspondence with the model given their attained share of abnormal returns, and this hypothesis is therefore refuted.

Hypothesis 2b: The majority of the expected causal paths between the disentangled intellectual types were supported in the analyses, cf. Table 4.2.2.2. The stated hypotheses which treat the intrinsic relationship of intellectual capital, hypothesis 2b and sub-hypotheses, indicate that some of the outlined paths are highly supported in the "Pessimistic High Earner" group. The effects of human capital on relational capital are the only ones of importance for the work force, supporting *hypothesis 2b1* and rejecting *hypothesis 2b2. Hypothesis 2b3* is rejected, cf. discussion for h*ypothesis 1c* and Table 4.2.2.2, where human capital does not necessarily affect innovation in the studied businesses. The successful companies' relations were found to affect their process capital and innovation positively, supporting *hypothesis 2b4. Hypotheses 2b5* and *2b6* were accepted, since relational and process capitals were found to be beneficial for corporate innovation. Investments in technological capital were identified to be beneficial for human capital and innovation, but not for relational capital and processes, refuting hence *hypothesis 2b7*. Lastly, all disentangled intellectual capital capitals except for human capital result in innovation, accepting *hypothesis 2b8*. Hence, except for human capital-driven innovation, the three outlined areas of intangibles are highly and exclusively contributing to the "Pessimistic High Earners'" innovativity degree. Thus, the successful companies practiced prod-

uct, technological and process-driven innovations, as supported by asymmetrical information theory.

Hypothesis 3: The findings of this study could falsify the hypothesis of good decision-making practices increasing the chances of success when directed towards innovation, cf. Table 4.2.2.1. These results indicate no interest of the successful companies towards strategically improving innovation directly.

Hypothesis 4 sustained that the innovative capacity of a company has positive effects on its performance, since competitive advantages can be obtained on basis of asymmetrical information, knowledge management and intangible investments in R&D and process development. Table 4.2.2.3 indicates that the successful companies of this study did capitalize on innovation, at higher values than in the other groups. These results are closely related to the previous findings that intellectual capital results in innovation, with the exception of human capital. The less successful companies invest heavily towards creating these intellectual capitals on basis of innovation, yet, as previous analyses suggest, their intellectual capital management is not as diverse as the successful companies'. Hence, the sense of direction in management activities and knowledge constellation differ, again supporting the theory of asymmetrical information.

Hypothesis 5 is first supported through the findings of Table 4.2.2.2, from where it can be understood that relational, process and technological capitals aim to make it easier for the successful companies to explain their managerial intentions. This is however not the case for human capital, where the knowledge embedded in employees is not often referred to when reporting. On the contrary, Table 4.2.2.4 indicates that disclosure practices did not significantly improve the profitability or performance of the high-earners.

Hypothesis 6 states that the performance of a successful company is positively affected by investments in all analyzed inputs. As indicated in the analyses of Tables 4.2.2.1, 4.2.2.2, 4.2.2.3 and 4.2.2.4, this is not the case. Table 4.2.2.1 suggests that strategy is only moderately affecting performance in the "Pessimistic High Earners" group, while Table 4.2.2.2 indicates that human capital does not significantly contribute either. Table 4.2.2.4 also suggests that performance is not largely affected by disclosure practices. The areas which contribute to performance in the high-earning companies are relational, process and technological capitals, cf. Table 4.2.2.2 and innovation, cf. Table 4.2.2.3. This hypothesis is therefore refuted.

Hypothesis 7 states that the market value (abnormal returns) of a successful company is positively affected by investments in all analyzed inputs. As indicated in the analyses of Tables 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4 and 4.2.2.5, this is not the case for all the analyzed inputs. Table 4.2.2.1 suggests that strategy is moderately affecting profitability in the "Pessimistic High Earners" group, while Table 4.2.2.2 indicates that human capital does the same. Table 4.2.2.4 suggests that profitability is not affected by disclosure practices. The areas which contribute to profitability are relational, process and technological capitals, cf. Table 4.2.2.2 and innovation, cf. Table 4.2.2.3, just as in the case of performance. Table 4.2.2.5 indicates that performance is moderately impacting profitability, therefore this hypothesis is rejected.

4.6 Summary of the Research Objectives

The problem statement of this study has been refined throughout its course first on basis of the literature review and in relation to previous research within the field. This study applied the recommendations of a voluntary reporting scheme together with a vast and well-developed theoretical base, with the aim of actually measuring and separate effects and their scope, while keeping them into their original context. The analytical framework and the theoretical apparatus have been integrated in the formulation of the survey in order to directly address the issues of interest. The collected data offered hence unique insights into the practices of Scandinavian and North American firms, allowing for relating and contrasting them on basis of the formulated managerial profiles.

After the consideration of the importance, validity and agreement of the results with the ambitions of identifying strengths and weaknesses of management within the stated research frame, it can be concluded that the results are satisfactory. The theoretical expectations were reflected in the successful companies' strategy to a great extent and the capability of generating abnormal returns decreased in agreement with the correspondence of the stated intellectual capital model. The major finding is that even if strategy played an important role in the successful companies, it was their intellectual capital structures that indicated the highest correspondence with the research model.

The external disclosure was not completely in agreement with the traits identified in the internal management. The "Pessimistic High Earners" did not con-

sider that disclosure practices are beneficial for either performance or profitability. The findings are indicative of the fact that disentanglement of the intellectual capitals is supported in both the internal practices and external disclosure, yet that external disclosure needs to be optimized in order to reflect the internal practices more adequately.

Whereas the current research study identified and measured the presence (the "what") and transitions of knowledge within different business architectures, it has also been explorative in its progress by applying the Danish recommendations of reporting, to show "how" value is created.

Whetten (1989) adequately stated that "what" and "how" describe and that only "why" explains. The "why" of the analyzed knowledge being useful for firm competitiveness and financial realizations are plentiful in this study.

First, the definition and the scope of the major reason of analyzing the usefulness of knowledge were settled in Section 2.5.1. Herein, it was found that the exchange value (market value) of knowledge is divergent from its usefulness. The solution was hence to develop an alternative tool of intangible valuation, which takes into account both the "usefulness" of knowledge administration and its reported and attained "exchange value", the essence of accounting.

Second, intellectual capital focuses on reporting and creating measurements, but is everything reported? As the above main criticism suggests, companies do not report all their strategic targets. In spite of this, this research study found support for modular effects of knowledge transitions, and added to the "why" through its description and measurement of the causal structures between the intellectual capital types and innovation.

The third argument that this study brings to light is that managers organize their knowledge to their best ability, yet that their reporting capabilities need to catch up. The theoretical support of "why" strategy makes sense in relation to the stocks of intellectual capital was incorporated into the analyses of the data through the addition of the strategic stream of resource- and knowledge-based views. It was shown that resources do not make specific sense to organize, although they were frequently disclosed in reporting. They were instead mobilized with a scope throughout diverse corporate activities and mentioned in the successful companies' external reporting, adding therefore significantly to the justification of greater abnormal profits through activities and overall practices.

Fourth, the practices of accounting have helped to decipher "why" knowledge should be classified, measured and related in addition to its management. Through the included support of utility theory, which contrasted higher risk and adversity, it could be shown that the lower the risk, the higher the profits. "Perceived profitability", as collected through the questionnaire, indicated the managerial capacity and awareness of how knowledge was produced and transformed. Hence, the accounting effort of classifying and measuring allowed for understanding "why" only the top-earners are the sole group which was found to be representative of the highest agreement with the suggested analytical structure. The function of intangibles (and their disentanglement) was in this way connected to the management objects, through the application of the analytical framework, to support the theorem of knowledge-based investments being risk-sensitive and highly dependent on innovation.

Since all these are aspects of managerial decision-making, a fifth "why" is that a too strong separation between the internal and external attention to "intellectual capital" and innovation is not to recommend in business, since the first-mentioned leads to the second one, which improves strategy to re-guide intangible knowledge towards better configurations and effects.

The sixth "why" relates to the benchmarked abnormal returns of the respondents, since currently, market value is the main indicator of business success. By showing "why" only some of the firms have the capacity of attaining good financial results, incentives were created for other firms to follow.

The seventh reason of justification of this study is that it was found that the successful companies apply a different approach to innovation than the rest. Human capital was not the main driving innovation force, but processes, relations and technologies. This way of safeguarding against imitation indicated that the successful companies do not mainly strategize about innovating, but that they innovate their strategies to remain unique and more idiosyncratic.

Table 4.6 summarizes the main findings of the current study.

First, the development of the abnormal returns variable indicated through z-scores which of the companies are more profitable than the average competitor from the same industry per year. Since all the targeted companies available in the data base where included in the aggregated analysis, it can be stated that the best existent proxy of the market has been applied as mean measure given the

variance and deviation of the available measurements. Hence, the evaluation of the participating companies as profitable or non-profitable was based on highly realistic metrics available in science.

Second, the created managerial profiles concerned the analysis of weather "managers are different in their perceptions about their actual abilities at different levels of abnormal financial returns". By triangulating perceived realizations with actual ones, a discriminatory insight could be offered throughout the analysis path in the corporate practices on basis of the identified group classification. Different manager types are as indicated differently aware of their capabilities, cf. Table 4.6. Utility theory and risk have therefore been associated with the three types of managers to create the "Pessimistic High Earners", "Realistic High Earners" and "Optimistic Low Earners" classes. Keeping the low performing group within the study does not diminish its quality since they are the control group, given different existing awareness traits, in the same research setting (same context of survey questions and coding map analysis). The cognitive analysis of this study is meant to be explorative, to define exactly where the subjects differ when practicing knowledge management and disclosure, and how come the effects differ. The selected analysis methods, the creation of the triangulating profiles across data types (primary and secondary) and the subsequent analyses applying the identified categorization are hence highly adequate for this ambition. Given the latent capacity and fuzzy logic of the applied latent classification combined with the structuring intellectual capital model, the results are not negatively affected by the presence of negatively profitable companies. These belong to their class, and as shown throughout the entire analysis, it can be seen where the classes differ on basis of the model's variables. Furthermore, the statistical tests of Section 4.3.1.1 confirm the results' validity and hence reliability for the research aim.

Research Area	Concept(s)	Analysis Type(s)	Section	Figure(s)/Table(s)	Class 1 (PHE)	Class 2 (RHE)	Class 3 (OLE)
Financial Effects	Abnormal Financial Returns	Quantitative (z-scores)	3.2.3.2	Table 3.2.3.2b	Positive	Positive and negative	Negative
Managerial Profiles	Managerial Profiles – Utility vs. Risk	Latent Class Analysis (probability of class belonging)	4.1	Figures 4.1.1, 4.1.2. 4.1.3a and 4.1.3b	"Pessimistic High Earners"	"Realistic High Earners"	"Optimistic Low Earners"
Knowledge Management → Disclosure → Financial Effects	Causality – Correspondence of the applied Intellectual Capital Model (Primary data)	Latent Class Analysis (IC model correspondence per management profile)	4.2.2	Tables 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5, 4.2.2.6, Figure 4.2.2.6, Tables 4.5.1 and 4.5.1.1	* High correspondence with the IC Model * Innovation as output * Pessimistic disclosure traits	* Lower correspondence with the IC Model * Innovation as input * Optimistic and futuristic disclosure traits	* Lower correspondence with the IC Model * Innovation as input * Optimistic and futuristic disclosure traits
Knowledge Management → Financial Effects	Knowledge Peaks and Economic Rent Generation – Benefits of asymmetrical information and innovation (Primary data)	Latent Class Analysis (Open or secret innovation, in-house development vs. leased/acquired, per management profile)	4.2.3	Table 4.2.3.2, Figure 4.2.3.2 Tables 4.5.1 and 4.5.1.1	* Innovation rather made in secrecy * In-house development preferred * Innovation is an output of intellectual capital	* Innovation is both developed and acquired * Innovations are preferably disclosed * Innovation is an input to intellectual capital	* Innovation is both developed and acquired * Innovations are preferably disclosed * Innovation is an input to intellectual capital

<table>
<tr><th>Research Area</th><th>Concept(s)</th><th>Analysis Type(s)</th><th>Section</th><th>Figure(s)/Table(s)</th><th>Class 1 (PHE)</th><th>Class 2 (RHE)</th><th>Class 3 (OLE)</th></tr>
<tr><td rowspan="4">Disclosure → Financial Effects</td><td rowspan="4">Transparency – Difference between Internal Knowledge Management and Disclosure (Δ Primary and secondary data)</td><td rowspan="2">Qualitative Data Mining with Indices development + ANOVAs, per management profile (Secondary data)</td><td rowspan="2">4.3</td><td rowspan="2">Figure 4.3.1, Table 4.3.1.1</td><td colspan="3">* Differences in entangled intellectual capital are not significant between the classes, while the disentangled ones are (in support of the Danish Intellectual Capital model's recommendations)</td></tr>
<tr><td>* Moderate intensity in reporting</td><td>* Moderate intensity in reporting</td><td>* High positive difference in reporting, almost double that of the other groups'

* Optimism and futurising traits in all studied areas</td></tr>
<tr><td rowspan="2">Quantitative Rank-based Δ + ANOVAs, per management profile (Primary and secondary data)</td><td rowspan="2">4.4</td><td rowspan="2">Figure 4.4.1, Tables 4.4.1 and 4.4.2</td><td colspan="3">* Intellectual capital items are the only ones more reported about than managed internally</td></tr>
<tr><td>* Prioritized discussions about disclosure itself most in reporting

* Disclosed least items on average, hence the pessimistic trait

* Discussed innovation and strategy least in reporting</td><td>* Disclosed intermediary average items</td><td>* Over-represented intellectual capital and strategy in reporting

* Disclosed most intensively in reporting</td></tr>
</table>

Table 4.6 Summary of the Research Objectives and Main Findings

Research objective 1 treated the topic of **"How do firms attain higher financial effects through an effective internal management of intellectual capital and innovation, in relation to reporting?"**, per identified managerial profile. The results indicate that the companies with the greatest conformity with the (mainly causal pattern) of the formulated research model also had the highest abnormal returns in relation to their competitors. Nevertheless, these same companies practiced all types of the defined intellectual capital forms (human, relational, process and technological), which their lower-earning counterparts did not to the same extent. Hence, by following the recommendations of Table 4.5.1, companies can safeguard against economic and efficiency losses according to the findings of this study. The successful companies treated innovation as an output of intellectual capital, which is in agreement with the recommendations of the Danish Intellectual Capital Reporting Guidelines. The attitude towards disclosure was again pessimistic, where one could argue that successful companies do not necessarily need to prove themselves externally, that results on the market speak for themselves.

Research objective 2 sought to define **"Are there any benefits from asymmetrical information or innovation type given intellectual capital's assumed idiosyncrasy?"**, per identified managerial profile. Herein, it was found that secrecy in innovation was characteristic for the high earners. A plausible explanation is that they were safeguarding themselves against imitation or tried to disrupt the markets with their secret innovations, often created in-house. Again, the successful companies were creating innovation on basis of their intellectual capital, while the other two groups of managers tried to innovate their intellectual capital. Innovation focused towards disclosure was characteristic for the lower earners, and even the "Realistic High Earners" sought to innovate their reporting practices.

Research objective 3, which tested for the existence the conditioning of information by asking **"How much less, if, is disclosed about externally than managed internally?"**, per identified managerial profile, also found differences among the managerial groups. It was identified that more secrecy in innovation and pessimism in disclosure was characteristic for the high earners externally as well, whereas optimism and futurizing was characteristic for the lower earners. When looking at the bundle of intellectual capital entangled, there was no obvious distinguishment between the studied managerial profiles. However, when analyzing it in disentangled form, it becomes obvious where

strategies and rent generation capabilities differ. At the same time, all the subject groups reported more intensively about intellectual capital than about strategy, innovation or disclosure. The high earners were the group which discussed innovation and strategy least in their reporting, whereas the low earners reported key items at almost double the intensity of that of the other managerial profiles. They also over-represented intellectual capital and strategy, most plausibly to create interest for future value generation through over-emphasizing it.

The main research question, “Is there a relationship/representation between what is organized in-house and reported about externally in companies, at different levels of abnormal financial returns?”, can hence be answered with a yes, based on the current empirical support. Hence, the effects, in measurable terms, are in great part mediated through disclosure of information. As always, certain factors condition the outcome. This study has identified “secrecy and pessimism” in the translation of managerial practices towards reporting and “optimism and futurising” as main differentiating parameters between successful and less successful managers, cf. Figure 4.6. Nevertheless, the formulated intellectual capital model captured factors of interest in both primary and secondary data, allowing for an overview over the causal patterns between strategy, disentangled intellectual capital types, innovation, disclosure, performance and profitability. Last but not least, innovation is not often related to internal management of intellectual capital in disclosure studies, and it could be explored on basis of the collected insights how it acts to create value along with the other aspects under study.

Previous studies often partition their analyses based on the levels of existing intellectual capital, innovation and disclosure intensity, while this study has leveled the financial effects and merged two distinct types of analyses, internal and external to the corresponding effect rank. It was shown how the management of knowledge consists of causal calculations of value,where the usefulness of knowledge was assessed in terms of profitable exchange value when the internal resource configurations are optimized.

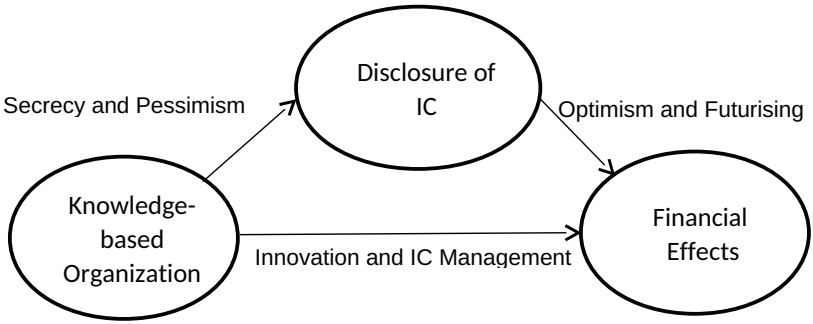


Figure 4.6 Relating Inside Management of Innovation, Intellectual Capital and Disclosure to Financial Effects

Second, the identified conditioning of information in disclosure practices safeguards an existing competitive advantage on the market from imitation, while the optimism and futurising seeks to attract investors and trust when this advantage is missing. Hence, certain transparency issues come with the practices of external reporting. "How much less is disclosed about externally than managed internally?", is mostly an issue in the less successful companies, as they tend to over-report in areas which they do not manage extensively to attract stakeholders for future investments, and do not transparently report about what they actually do manage and focus of their activities. Even the successful companies reported intensely about intellectual capital, with the difference that they also managed all aspects of it compared to the less successful companies. Hence, the competitive advantages lies in being on knowledge peaks and innovating, while disseminating information in an accurate way externally.

Chapter 5 – Conclusions

The theoretical support of this dissertation conveyed a few very important concepts, on which the foundation of this study lies. These account for the strategic stream of management, as expressed in uniqueness of resources, diversity, inimitability and relative positioning supported by the resource-based and knowledge-based views. These capabilities are expected to have effects on firm success, but recommendations about their measurement are poor, especially in relation to innovation and disclosure. Innovation was herein conceptualized as a result of knowledge, which by being unique adds to a firm's capabilities, as in a knowledge landscape where peaks are unknown and idiosyncratic. By containing all these aspects within the frame of the Danish Guidelines of Intellectual Capital Reporting, it was possible to implement the structure of a measurement framework on empirical support, to measure strategy and knowledge. It can be stated on basis of the findings that a certain type of managers, the "Pessimistic High Earners", were making the most use of their knowledge resources and that the included theories and methodological structure were found to be characteristic to a high extent for these successful managers. The empirical support of the study allowed hence for targeting and empirically validating specific theoretical aspects. The utility-based management function and its risk considerations were found to be adequate within the stated parameters, in agreement with tenets of Managerial Economic theory.

Furthermore, the fact that the applied model and developed scales were usable cross-countries without the companies necessarily practicing the intellectual capital reporting themselves paves way for broader application areas and further studies.

5 Theoretical Development and Contribution

The used instruments and knowledge concepts are next discussed, to relate the findings to previous research and to highlight the positioning of the new findings within the existing body of research. The study makes contributions within five areas: it develops grounded theory, is methodologically optimized and furthermore, contributes to intellectual capital research in three areas: strategy, innovation and firm valuation.

Glaser and Strauss (1967) wrote that coding of data combined with data analysis are useful in locating and building grounded theory. Gibbs (2007, pp. 49-50) notes that insofar theories arise out of the data and are supported by the data, they can be considered grounded. This was a main ambition in this study, where careful implementation of theoretical concepts was further analyzed in the diverse included tests in order to confirm, falsify and explore, based on classification, divergence and insights into the findigs. The scope was to create a research design which can help in understanding more about the occurring issues of firm valuation on basis of intangible resources. Hence, knowledge and its usefulness were defined on basis of existing theory, and in order to account for all areas of interest, an interdisciplinary design was formed to derive new hypotheses through merging the included study fields. Account was taken to both previous research and to theoretical recommendations. Therefore, the resource- and knowledge-based views, which withstand that intangible resources and capabilities are the major sources of competitive advantages, were combined with intellectual capital theory, which aims to identify, manage and measure knowledge to increase corporate performance. The findings strongly suggest that strategy should be analyzed with the profiling capabilities of the intellectual capital framework to track the usefulness of knowledge management, since the importance of intellectual capital is more pertinent than that of strategizing for the high earning firms. Another path was added to this conceptualization, namely external reporting, to verify whether support could be found for this activity when valuating firms on basis of their disclosed investments and practices. Firms are expected to disseminate and discuss knowledge about themselves and to create a relationship with the stakeholders for generating economic growth. Apart from mandatory reporting, firms often seek to communicate their targets and attract investors for further development. Since abnor-

mal returns are a credible outcome of successful strategizing, the proposed alternative intangible valuation model was applied on the collected empirics to contribute with novel findings, on basis of novel data, to the theory of firm competitivity, performance management and reporting. The scope of this work was hence to improve knowledge in the field by applying a different perspective on existing frameworks and to contribute with new findings about the applicability and use of the underlying tools through indirect methods of valuation. It has been shown that the strategic part of managing intangibles and knowledge is secondary to its innovativity. The successful firms did not strategize or innovate on basis of their human capital, but based on their relations with customers and suppliers, processes and technologies. The successful companies were the only ones to indicate the highest correspondence with the stated model, and the only ones to innovate their strategies and innovating in secrecy. Furthermore, because the realizations of the firms and the correspondence with the stated model decreased accordingly, specifications could be offered about the divergent areas. Because of these arguments and the specificity of the results, the developed theory is justifiably grounded.

Methodology

Guthrie (2012) argues that many studies within highly ranked intellectual capital related journals do not propose a new empirical model (only 22 % do) and that few theoretical studies exist which incorporate both a literature review and empirics (only 9.5 % do). This argument makes this study complete and a rather rare one, living up to the requirement of the recent research field status. The implications of this issue were taken into regard by creating the survey on theoretical basis, so that the collected actions could be related to stock value through direct measurement. According to MacKenzie (2006), this is a shortcoming in many stock valuation models. He further argues that a misalignment of theory and data is usually a sign of warning, where it should be further analyzed “how” reality exists independently of its theoretical depiction. Since the suggested model was a good representation of the leading firms, the included theoretical base is justified to have a positive effect on abnormal returns, as estimated on basis of the novel methodology applied in this study, with the small discrepancies outlined throughout the course of the analyses and conclusions.

The major theoretical contribution of the applied methodology lies in the facts that first, the resource- and knowledge-based theories were modeled in addition to modern intellectual capital theory to define which type of strategic focus is profitable and how this loosely coupled theorem acted in relation to the management and usefulness of knowledge, innovation and external reporting. This cross-disciplinary design allowed for verifying the impact of strategy, as described in strategic management theory, in relation to its importance when intellectual capital theories are applied in internal management. The resource- and knowledge-based theories often conflate the effects with the used resources. By combining these two theoretical areas, the importance of identifying, measuring and defining knowledge was analyzed in relation to the strategic scopes of the firms. The results indicated that intellectual capital theory, which builds both on strategizing and measuring knowledge, is a more suitable framework for the successful companies, based on empirical measurements.

Lee and Guthrie (2010) specify that the occurrence of studies which use computerized content analysis for testing different theorems of intellectual capital firm valuation relevance are few. Their analysis of annual reports employs a novel intellectual capital taxonomy, based on the Factiva Intelligent Taxonomy classification of intangibles. The current study applied key terms recommended as valuable in previous research studies, with a preference towards Mouritsen et al. (2001), Nielsen et al. (2006), Rimmel et al. (2004) and Bukh et al. (2005) since these indicators were plausible key factors to identify in relation to the recommendations of the Danish Guidelines of Intellectual Capital Reporting (2003). Nevertheless, since in addition, the questionnaire was not aimed at companies who apply this reporting standard and the respective annual reports and market data were collected exclusively for the included respondents, the findings are not biased. This reporting standard has been used to structure the research setting for the whole study, while the collected key terms were applied on the external disclosure of the companies. The questionnaire built on the recommendations of the same reporting standard for structuring and anticipation of value of use of the management objects, with the respective causal direction described in the empirical model. The scales have however been constructed with regard to previous studies and management theory like Nelson and Phelps (1966), Stabell and Fjeldstad (1998), Carmeli (2001), Bontis et al. (2002), MERITUM (2002), Mouritsen et al. (2003), Slack and Lewis (2003), Youndt et al. (2004), Gottschalk (2005), Lazonick (2005), Mackey and Barney (2005),

Hisrich et al. (2008) and Chandler (2009) when the questions were formulated, and modified to fit the causal structure of interest. The rest of the scales were based on own development, to serve in testing concepts of interest that might be of importance to the research topic. Lastly, the authors use a Tobin's Q valuation method for indicating the usefulness of intellectual capital, whereas the current study uses abnormal returns in relation to competitors from the same industry to profile the management types in relation to the identified key terms in external disclosure. A developed alternative were z-scores, which diminish bias associated with the standard deviation of the variables (Altman 2000; Agarwala and Taffler, 2007). Both output measures yielded the same results, as included in this dissertation. Furthermore, the probability distribution calculated by the latent class models is reliable, even in relation to ranks and binary outcomes since it builds on z-scores as well. The developed indices were transformed to relative rankings in order to be comparable with the rest of the companies who are in the same level of abnormal returns class, testing both the internal management architectures' compositions and their causal effects, as well as reporting content. While the authors' study focuses on 156 IT firms globally, this study covers ten industrial sectors and companies from four countries. The smaller amount of firms was safeguarded by relating them to actual industrial realizations, i.e. abnormal returns in relation to the competitors from the same industry and year.

Second, modern accounting literature does not explicitly account for the specified intellectual capital types' effects, or the relation between "innovation" to "strategy" as an outcome of intellectual capital. Therefore, by linking these bodies of research together, it could be shown how the successful companies manage knowledge internally, and what happens to the output. The high earning companies innovated on basis of their processes, relations and technologies, as effects of the intellectual capital stocks instead of mainly relying on their human capital. Second, they innovated their strategy rather than strategized for innovation, and this, often in secrecy.

Curado et al. (2011) suggested that both the internal management and external disclosure of firms should be taken into account when firms are valuated. The third ambition was to link the internal practices to the external disclosure. Even if partial positive results could be registered for the high earners, the reporting practices did not reflect the internal management architectures in external re-

porting to a satisfactory degree for the most successful firms, which reported the most accurately in relation to their internal management efforts.

Previous Shortcomings of Intellectual Capital Research

Guthrie, Petty and Johansson (2001) offered three propositions for advancing the development of intellectual capital:

> a) to understand the measurement, disclosure and management of intellectual capital, there is a need for a better understanding and definition of concept
>
> b) measuring and managing intellectual capital could improve the decision-making capabilities of internal report and annual report users because intellectual capital has information content and is useful
>
> c) companies that manage and measure their intellectual capital will understand valuation creation better and realize performance improvements as a direct result of these practices.

Point a) was accounted for in this study through the inclusion of intellectual capital theory along with strategic management theory as foundations of developing the survey and structuring the study throughout its content, with regard to disclosure. Hence, the theoretical development of this study is based on an improvement in relation to previous studies and therefore contains added theoretical value through its confirmatory findings, which allowed for the dynamism of knowledge to be related to abnormal returns and to disclosure through a first attempt of studying this triangulation in the research area empirically.

Point b) is supported through the fact that by applying the suggested intellectual capital framework, both internal decision-making and external reporting could be compared to each other, so that differences and similarities become visible within the stated parameters. Disclosure was found to be rather important internally for the successful firms, and the less successful ones applied a more intense approach to external reporting in order to succeed better.

Point c) was also accounted for through the creation of the alternative intangible valuation model created on basis of core tenets of the included literature. It can be proved, with reference to the empirical findings, that this tool of evaluation was successfully used to structure, measure and evaluate firm's manage-

ment through accounting. Such an analysis could help in both internal and external firm decision-making.

As outlined in the theoretical chapter, most previous studies focus on either the strategic stream of intellectual capital or on the measurement one. A shortcoming of applying only strategic management literature is that the employed resources are conflated with their theorized effects, as mentioned in Section 2.5.1. Since the included theory and empirical model are cross-disciplinary, value could be added to the field of research through the finding that successful firms engage in all types of intellectual capital. Second, it could be proved that the causal pattern hypothesized in the empirical model revealed differences in the firms' management architectures. Third, when disentangled, intellectual capital theory added through the recommendations of i.a. the Danish Guidelines of Intellectual Capital Reporting (MERITUM, 2002; J. Mouritsen et al., 2003) and the modularity capacity described in i.a. Bukh and Mouritsen (2005) an explanation to why it is important to structure knowledge, track it and disseminate it. These last enumerated actions are expressed in strategic management theory as the tents of economizing, organizing and modularizing knowledge. What the current study adds to this theorem of disaggregation is that by measuring and administering, firm value can be traced through a total surveying perspective.

Mouritsen (2006) indicated a need of more studies which should analyze how measurement of intellectual capital drives business performance, by actual empirical testing. He further outlined three characteristics of the performative intellectual capital research type:

a) What does intellectual capital do?

b) Where is intellectual capital located?

c) How is intellectual capital related to value?

In the performative view, intellectual capital is considered to be a boundary object, which has diverse and idiosyncratic representations. Its inscription (the specified resources architectures) is in this study separated from its effects (abnormal returns) and analyzed. The ostensive character of this research study analyzed the configurations of intellectual capital which lead in the right direction, i.e. towards abnormal earnings in relation to the competitors. Second, its performative value lies within the description of how value can be successfully

created and how intellectual capital can be the tool in this creation process. Hence, it is herein argued that the supporting model and analyzes have contributed with knowledge about a) that intellectual capital is important for firm competitivity, and b) its deconstruction allows for insights within how more success can be materialized, c) the findings offer empirical support to the underlying theory.

Additional reasons of why the findings can qualify as "performative" are the following empirically-based statements which relate to the above asked questions, yet if study and context-specific:

> a) the applied intellectual capital framework helped in identifying patters which can be useful in describing the mediation of knowledge and its practices into financial effects through applied innovation and disclosure.
>
> b) it is to a great extent located within the operational processes of the successful firms, which exhibited the described causal paths of the empirical model and kept its innovations secret
>
> c) it is related to financial value through the transformation of capabilities, conscious internal management (rather than optimistically disclosed) and unique peak knowledge (innovation).

This study nevertheless added knowledge within the recommendations of Boedker et al. (2008), who suggested that future research should bring more contribution into how reporting frameworks differ. While the results of this research project are not a direct answer to this issue, they are non-partial due to the fact that the respondents were not sampled by their use of a certain reporting framework. The results can therefore contribute with the argument that the firms which achieved the greatest abnormal returns also indicated the highest agreement with the stated structure of the model. Since this study mainly builds on the Danish model, a partial response is that this framework is universal for the collected sample, which contained companies from different continents.

Management Profiles

The utility theory and its perspective on risk described in Salvatore (2012) was very suitable to relate to when defining and understanding the three outlined

management types: “Pessimistic High Earners” as risk-averse, “Realistic High Earners” as risk-neutral and “Optimistic Low Earners” as risk-seekers. This phenomenon also has the following implication for the research field.

Rylander and Peppard (2003) criticized the directing and planning nature of strategy, being instead in favor of strategy having a behavioral underpinning which should guide knowledge workers. This should be done by understanding the conditions under which organizations compete and create novel approaches to meet new demands. The core tenet is that strategy should mobilize knowledge as an identity. This argument found support in the current study, where strategy was not the main directing action in which the successful companies engaged. The utility theory-based management groups identified in this study did not only help in understanding risks that the companies phased, but allowed for identifying strategic, value-creation and intellectual capital and innovation profiles, along their investments and realizations. Through this approach, when this underlying latent logic was mapped, indications of business optimization could be identified.

Alcaniz et al. (2011) argue that intellectual capital might also bring disadvantages to some of its practicing firms, when clues to weakness are revealed. This is either due to the fact that a) competitors can act or perform better when this is known or b) that stakeholders become aware of the fact that the business is not performing well enough. In such a case, managers become aware of the fact that the business is not performing as well as they though it was. This finding is highly supported in this study, where the three identified manager types’ abnormal returns coincide with their management success as described in the formulated empirical model. A second remark of the authors to which this study can add insight is within the proposition of critical perspective which focuses on how these assets are created and recreated, with close consideration to the conditions under which this is performed. In spite of the fact that the empirical model is static in the sense that it only analyzed one response occasion, its context is dynamic because it includes the knowledge resources, their causal flows, their outputs of diverse types (innovation, disclosure and strategy) and the specific state-of-analysis description of the management architectures in their external operational context. Kianto et al. (2014) made this distinguishment in their theoretical article, although without empirical basis. Knowledge management, which is acting dynamically, moderates the effects of intellectual capital

static resources, or assets, on performance, in agreement with the findings of this study.

Intellectual Capital and Innovation

Key terms such as “knowledge workers”, “knowledge-creating companies” and “sustained and trusted relationships” are viable tenets of the ‘intellectual-capital based view’ of the firm (Martín-de-Castro et al., 2010). Few studies, if any, analyze strategy, intellectual capital, innovation and disclosure as exclusively as this study does. It could be shown in this study that innovation was directed towards strategizing and improvement of technologies instead and those investments aim to improve the innovativity of the successful firms. This is a finding which is much in agreement with the scope of the MERITUM project, aimed on measurement and understanding on intangible assets in order to improve innovation. Darroch and McNaughton (2002) found that knowledge acquisition and responsiveness to knowledge are more important for innovation than knowledge dissemination. McDermott (1999) showed that benefits from innovation are temporal and that innovation is better off in conjunction with a division, while Subramaniam and Youndt (2005) identified its effects in both incremental and radical innovation. Cuganesan (2005) found that the intellectual capitals transform each other in the creation of innovation, while Reed et al. (2012) have shown that open innovation can be beneficial as well, not just in-house innovation. Antonio et al. (2014) outline the importance of organizations to extract and generate the greatest value from available resources, while Mouritsen (2006), suggested that intellectual capital can be organized and enhanced through mobilization of knowledge towards endogenously defined values, even with other types of capitals, such as financial (V. Murthy and Mouritsen, 2011a). Hence, innovation is acting together with the other capitals in improving strategy, as supported in this study and in agreement with most intellectual capital literature. The contribution of this study is that a mapping was made over how strategy moderately directs intellectual capital further into innovation, which then partially re-defines strategy again against better, renewed and more optimal configurations. This finding is in agreement with the Danish Guidelines of Intellectual Reporting (2003). Yet, successful managers prefer to innovate in secret over disclosing their research and development activities.

Merkley (2014) outlines that external disclosure on innovation is usually scarce because a) accounting rules mandate that R&D investments should immediately be expensed rather than capitalized, b) the amount of R&D information is limited on the face of financial statements and c) it is usually associated with a higher level of risk due to imitation and information asymmetry which is idiosyncratic in nature and not easily communicated in accounting measures. The author found that current earnings performance (adjusted for R&D expense) is negatively related to the quantity of narrative R&D disclosure. By conducting a content analysis of the detail, tone, and readability of narrative R&D disclosures, it was found that managers adjust R&D disclosures based on earnings performance to provide relevant information rather than to obfuscate performance. These findings are highly in agreement with this study, where the same traits were identified in the external disclosure of the represented companies, per management class. The most successful firms disclosed slightly less key terms of interest than the other two groups.

Intellectual Capital and Firm Valuation

Related previous studies have applied different approaches to firm valuation (Yang and Kang, 2008; Cheng et al., 2010; Hsu and Wang, 2010; Surroca et al., 2010). These studies have related the management of intellectual capital and innovation to market value directly, without distinguishing how the respective capitals differ between successful and unsuccessful firms. They have not offered the value-adding nuance that this study has, by evaluating strategic profiles, knowledge resource constellations, intrinsic relation of intellectual capital and abnormal returns per management type. Others have sought to identify new measurement models (Martínez-Torres, 2006; Y. Chen, 2010), validate existing ones based on financial intellectual capital metrics (Tseng et al., 2015). In agreement with most studies consulted, their efforts lack a connection to actual realizations and even if managers and scholars learn and apply these prescriptions, they might or might not be successful in the business setting.

Tayles (2007) analyzed the perceptions of managers about the effect of intellectual capital on market value, but failed to take into account the causal pattern within the companies' knowledge management. Dumay (2009) emphasized value drivers and Alwert et al. (2009) sought to find support of the value of reporting. Andreou and Bontis (2007:345-374) analyzed resource allocation with-

in intellectual capital. A shortcoming of the enumerated studies are that they did not actually verify empirically whether firms are more successful in relation to competitors, remaining hence somewhat limited.

Most measurement stream-related intellectual capital studies relate the quantum of information to market value by more or less only analyzing the evolvement of its reporting practices, e. g. (Abeysekera and Guthrie, 2004; Roslender and Fincham, 2004; Petty et al., 2008; Sonnier, 2008; Joshi and Ubha, 2009), or even strategy construction (Dunne and Buttler, 2004; White et al., 2007; Phillips et al., 2008; Cormier et al., 2009; Holland, 2009; Joshi and Ubha, 2009). Unfortunately, as shown in this study, this is not enough for a reliable firm valuation. Disclosure and reporting affect the outcome, and have a good chance of increasing abnormal returns, but solely considering this perspective is misleading. In agreement with Abhayawansa and Guthrie (2010), who criticized the mean relative ranking to that of other items in surveys when applying the perceptional perspective, it is herein argued that it is neither enough to only apply the internal perceptions of managers when evaluating firms' management. Rankings should be based on median values to avoid bias, as in the case of the current study. When internal management is applied in addition to external reporting, the frameworks of intellectual capital can add more value and lead to more accurate firm valuation. At the same time, specifications can be made for improvement. Nevertheless, Dumay and Cai (2015) critique the methodologies applied when content analysis is performed on e.g. annual reports because they often lack hypotheses. When performing the content analysis in this study, the aim was to identify if the same traits as identified in the primary data tests could be supported by the secondary data per stated managerial profile, and/or what the differences consisted of.

The main contributions of the current study are summarized next, before discussing limitations and recommendations of further studies.

The necessity of this study is primarily supported by the following general critique in relation to the outlined previous studies, which:

a) lack the specific causal connection that this tool and purported analysis offer

b) lack an empirically supported connection between strategy and reporting practices in relation to the value-creating logic of successful firms

c) do not relate the disclosure quantum to the market profits in relation to the competitors in the same industry while pinpointing strengths and weaknesses in the internal knowledge management

d) have not tested and applied the recommendations of the Danish Guidelines of Intellectual Capital Reporting (2003) as in the formulated evaluation tool of corporate performance.

Whereas the results, implications, knowledge and insights obtained through the current research projects cannot be considered exhaustive for all the gaps in the field, a highly contextual and observed management structure could be identified, validated and questioned in relevance to firm competitiveness. By defining which deviation from the empirical model's structure constituted risk on basis of the defined parameters, improvement suggestions could be offered, cf. Section 4.5.1, "The Successful Companies' Internal Management Practices".

5.1 Limitations of This Study

Advice of improvement could be delivered on basis of the current sample, mainly due to the fact that an analytical perspective was rigorously applied and implemented throughout the process of this research project. Rather few companies were included in this study if their amount is considered in statistical normal distribution terms. However, the applied analyses did in fact not support a linear distribution or probability of the data. The first choice of analytical model was structural equation modeling. Because of the fact that this technique often requires hundreds of replies to be valid, it was not possible to perform on the amount of collected responses. The applied latent class analysis as an alternative not only allowed for simulating the collected observations without the loss of scientific quality, but it is also reliable for non-linear distributions and fuzzy survey-based logic. Therefore, the number of respondent companies was carefully safeguarded through a reliable connection to their industrial sectors' achievements, year of analysis and location. This fact makes the results non-generalizable, but broadly represented and more accurate than in the majority of current studies. When considered from the perspective of a "case study", which it is due to its multi-case study structure, it can be considered to be rather complex with 29 cases and well-documented given the large questionnaire size.

5.2 Recommendations of Further Studies

In addition to other studies, this study distinguishes between management objects, such as strategy, disentangled intellectual capital types, innovation and disclosure as supporting resources, activities and effects. Since this approach was found useful in the estimation of managerial ability of generating abnormal returns, future studies should apply a structure based on the Danish Intellectual Capital Reporting Guidelines. Furthermore, studies should take into account the causal direction within the management activities and their effects, just as made in the questionnaire foundation of this study.

The performed analyzes of variance in Sections 4.4.1 and 4.4.2 indicated that differences could only be supported between the management profiles' intellectual capital practices when the intellectual capital types were evaluated separately, i.e. in disentangled form. This might be due to two plausible reasons, which should be further analyzed:

- that this is a shortcoming of the sample size applied in this study[18]
- that the Danish Guidelines of Intellectual Capital Reporting offer the foundation for more than a reporting initiative and that they can help develop much better valuation-focused estimation models as commonly observed in the difficult to understand reported value of companies.

Other aspects of importance to evaluate further are i.a.:

- If the most profitable group had least discrepancy between management and disclosure, can this be considered proof of positive effects of disclosure?
- As observed, all groups were reluctant in reporting about innovation, disclosure itself and strategy. Could profitability be improved if these aspects are enhanced in reporting?
- Intellectual capital is perceived to be more important to report about than to manage, yet, all studied groups do not practice all types of outlined intellectual capital. Could a change towards more diversified intellectual capital resources improve profitability?

18 The results obtained on basis of this sample of observations seek to be generalizable of the theoretical core propositions, within their contextual limits, and because of to the sample size, therefore not generalizable for the whole countries.

On the analysis technique side, the latent class analysis technique used in this study proved to be great for classification purposes and understanding composition. It is currently used within many other domains of research than intellectual capital. Because of its highly reflective nature and unlimited areas of application, it should be used in more related studies. Furthermore, the data mining approach allows for performing computerized content analyses easily and facilitates grouping and subsequent statistical evaluation in relation to other analysis aspects, through triangulation based on observable clusters/groups/profiles. This can be performed in structural equation analysis as well, if the data sample permits for it.

Nevertheless, this study was performed on basis of one treatment, i.e. one time measure of both the primary and secondary data. Future studies should preferably apply a longitudinal perspective, with repeated treatments. Another research direction could be to analyze the diminishing returns on investment commonly theorized in the utility-based managerial economics theory which occur along time. Plausible solutions of preventing diminishing returns could be constant renewal and innovation, updated strategy or entering new markets.

Appendices

Appendix 1 – The Survey

The empirical model paths (42 questions) are next indicated for the relevant analyzed cases (29). The survey scales are uni-dimensional and multidimensional. The descriptive data are presented in Table A1f.

Strategy

This questionnaire part evaluates the strategic intents in relation to operational practices and investments in intangibles, with a focus on the current decision-making and future opportunities of capitalization on basis of resource and activity management. The aim of this variable is to determine if and how strategy affects the internal causality of intellectual capital, innovation as an outcome of knowledge management, strategy-guided disclosure and if the outcome depends on uniqueness. The survey scales are next summarized.

Survey Constructs – Strategy

Scale	Causal Direction	Sources
1. When a company's goals are communicated, then this vision is accepted and followed by the employees	Strategy -> Human Capital	Bontis et al. (2002); Meritum (2002); Mouritsen et al. (2003)
2. When a company's goals are clear, then customers and partners are more interested in connecting	Strategy -> Relational Capital	Bontis et al. (2002); Meritum (2002); Mouritsen et al. (2003)
3. When specific policies and procedures are in place, individual work is aided and there is a strong emphasis of staff to adhere closely to them	Strategy -> Processes	Bontis et al. (2002)
4. A clear sense of direction increases the relevance of using adapted information systems and technological standards	Strategy -> Technologies	Bontis et al. (2002)
5. Clarity of strategy and corporate goals motivate innovation	Strategy -> Innovation	Slack and Lewis (2003, pp. 8-29)
6. The clearer a strategy is, the more effect is obtained from using performance measurement systems and external reporting	Strategy -> Disclosure	Slack and Lewis (2003, pp. 8-29)
7. The more flexible the strategic direction of a company, the more the organization can adapt and increase	Strategy -> Performance	Bontis et al. (2002)

its performance		
8. The more a company benchmarks itself in relation to competition on the market, the more successful it gets	Strategy -> Profitability	Slack and Lewis (2003, pp. 8-29)

Table A1a Survey: Strategy

Intellectual Capital

Intellectual capital is measured as a multi-dimensional construct, building on the recommendations of the Meritum (2002) project and the Danish Guidelines for intellectual capital reporting in Mouritsen et al. (2003). The applied individual capital types are "human", "relational", "process" and "technological" capital and represent different dimensions of the knowledge stocks managed by the companies:

- human capital represents the "employees' skills and personal competencies, experience, the combination of different types of employees and educations, employees' motivation, commitment, willingness to adapt, etc"
- relational capital refers to companies' "customers and customer mix, relations to customers and users, their satisfaction and loyalty, their referral of the company, insight into users' and customers' needs and the degree of co-operation with customers and users in product and process development"
- process capital relates the "knowledge content embedded in the company's stable procedures and routines. These can be the company's innovation processes and quality procedures, management and control processes and mechanisms for handling information".
- technological capital "refers to the technological support of the other three knowledge resources. Focus is usually on the company's IT systems (software and hardware) such as the intranet, IT intensity, IT competencies and IT usage".

[Definitions: Mouritsen et al. (2003, p. 11)*]*

This survey part captures the internal causality of the individual intellectual capitals and their relation to innovation, disclosure practices, performance and market value. Their relations to strategy are already included in the first part of the survey.

Survey Constructs – Intellectual Capital

Scale	Causal Relationship	Sources
9. Our employees actively seek to partner up with customers, suppliers, alliance partners etc. … and this helps us improve our existing and develop new business relationships	Human -> Relational	Youndt et al. (2004)
10. Our employees are constantly developing the work procedures … and this makes our processes more effective	Human -> Process	Bontis et al. (2002)
11. Our employees collaborate with each other to diagnose problems … and this increases our innovativity	Human -> Innovation	Youndt et al. (2004)
12. Our firm monitors employee performance … and this increases our external disclosure capability	Human -> Disclosure	Meritum (2002) ; Mouritsen et al. (2003)
13. Our employees' knowledge is important … and it increases our performance	Human -> Performance	Youndt et al. (2004)
14. Our employees and their skills are highly valuable to us … and this increases our financial returns	Human -> Profitability	Own development
15. Our customers help us to co-create products and services …	Relational -> Process	Own development
and this increases our feedback		
16. Our relations with supplies and customers are vital for our development … and they result in new products and ideas	Relational - > Innovation	Own development
17. Our suppliers' qualities are beneficial for us … and are of great influence when we report externally on what makes us special	Relational - > Disclosure	Own development
18. Our customers and suppliers share knowledge with us … and this increases our performance	Relational -> Performance	Own development
19. Our customers and suppliers collaborate with us a lot … and this increases our profitability	Relational - > Profitability	Own development
20. We have designated workflows and practices … and this increases our innovativity	Processes -> Innovation	Youndt et al. (2004)
21. We monitor progress in our performance management systems … and this increases the quality of our external reporting	Processes -> Disclosure	Own development
22. Our production system is responsive to changes on the market … and this helps us meet variations in demand better	Processes - > Performance	Slack and Lewis (2003, pp. 229-234)
23. We design our production processes closely … and this helps us attain higher market value	Processes -> Profitability	Own development

24. We invest in and use computing devices (pcs, laptops, workstations, iPads, etc.) ... and this increases the efficiency of our employees	Technologies -> Human	Youndt et al. (2004)
25. We invest in and use IT-systems and social networks (e.g. LinkedIn, Facebook and Twitter) ... and this helps us extend our business relationships with customers and suppliers	Technologies -> Relational	Own development
26. We integrate our information systems with one another ... and this increases our productivity	Technologies -> Process	Youndt et al. (2004)
27. We register vital work-related knowledge and information ... and this increases our innovative capabilities (do not re-invent the wheel)	Technologies -> Innovation	Own development
28. We design our IT-systems to structure and organize our knowledge ... and this helps us to develop more detailed external reporting	Technologies -> Disclosure	Youndt et al. (2004); Bontis et al. (2002)
29. We upgrade our technological infrastructure and systems ... and this increases our performance	Technologies - > Performance	Own development
30. We invest in technological infrastructure and production systems ... and this increases our profitability	Technologies -> Profitability	Own development

Table A1b Survey: Intellectual Capital

Disclosure

This variable is a reflection of the effects of the resources, activities and outcomes of the management systems, as well as of the efficiency of the practiced strategizing and decision-making and it is often what is publicly disclosed and on basis of which the company is evaluated in relation to its market value, attractiveness on the market and its competitive ability.

Survey Constructs – Disclosure		
Scale	**Causal Relationship**	**Sources**
31. We systematically develop more specific external reporting and communication ... and this creates a focus which increases our performance	Disclosure -> Performance	Meritum (2002),
32. ... and this increases our profitability	Disclosure -> Profitability	Own development

Table A1c Survey: Disclosure

Performance

The performance variable captures how well the company thinks it does in relation to its competitors, and how much this increases its profitability.

Survey Constructs – Performance

Scale	Causal Relationship	Sources
33. Our performance is higher than our competitors' ... and this increases our profitability	Performance -> Profitability	Own development

Table A1d Survey: Performance

Innovation

Innovation is defined as an effect of knowledge processing, where new ideas and incremental improvements are vital for better performance and higher profitability. The proposed scales allow hence for the determination of the areas in which innovation contributes the most to competitive advantages.

Survey Constructs – Innovation

Scale	Causal Relationship	Sources
34. We buy or lease innovations ... and this increases our competitivity	Innovation (bought/leased)	Own development
35. We systematically develop new ideas and knowledge	Innovation -> Strategy	Own development
36. ... and this affects our employees' efficiency positively	Innovation -> Human	Youndt et al. (2004)
37. ... and this attracts more customers and suppliers	Innovation -> Relational	Own development
38. ... and this makes our processes and work flows to function smoother	Innovation -> Processes	Own development
39. ... and this makes our technologies to function better	Innovation -> Technologies	Own development
40. ... and this makes us report our innovations externally instead of innovating in secrecy	Innovation -> Disclosure	Own development
41. ... and this improves our performance	Innovation -> Performance	Youndt et al. (2004)
42. ... and this improves our profitability	Innovation -> Profitability	Own development

Table A1e Survey: Innovation

Variable	st Dev	Var	Min	1st Ou	Median	Mean	3rd Qu	Max
Strategy -> Human Capital	1.679	2.820	1.000	4.000	5.000	4.966	6.000	7.000
Strategy -> Relational Capital	1.634	2.670	1.000	4.000	6.000	5.207	6.000	7.000
Strategy -> Processes	1.645	2.707	1.000	4.000	5.000	4.724	6.000	7.000
Strategy -> Technologies	1.655	2.739	1.000	5.000	5.000	5.103	6.000	7.000
Strategy -> Innovation	1.699	2.887	1.000	5.000	6.000	5.621	7.000	7.000
Strategy -> Disclosure	1.583	2.507	1.000	5.000	6.000	5.310	6.000	7.000
Strategy -> Performance	1.914	3.663	1.000	3.000	5.000	4.655	6.000	7.000
Strategy -> Profitability	1.807	3.266	1.000	4.000	5.000	4.862	6.000	7.000
Human -> Relational	1.509	2.278	1.000	5.000	6.000	5.276	6.000	7.000
Human -> Process	1.514	2.293	1.000	5.000	6.000	5.310	6.000	7.000
Human -> Innovation	1.523	2.320	1.000	6.000	7.000	6.034	7.000	7.000
Human -> Disclosure	1.977	3.909	1.000	2.000	4.000	3.862	5.000	7.000
Human -> Performance	2.041	4.167	1.000	1.000	3.000	3.103	5.000	7.000
Human -> Profitability	1.322	1.749	3.000	5.000	7.000	6.034	7.000	7.000
Relational -> Process	2.231	4.975	1.000	2.000	5.000	4.241	6.000	7.000
Relational - > Innovation	2.096	4.392	1.000	3.000	6.000	4.966	7.000	7.000
Relational - > Disclosure	1.732	3.000	1.000	3.000	4.000	4.000	5.000	7.000
Relational -> Performance	1.929	3.719	1.000	4.000	5.000	4.828	6.000	7.000
Relational - > Profitability	1.873	3.507	1.000	3.000	4.000	4.310	6.000	7.000
Processes -> Innovation	1.918	3.677	1.000	3.000	4.000	3.966	5.000	7.000
Processes -> Disclosure	2.405	5.786	1.000	1.000	4.000	4.000	6.000	7.000
Processes - > Performance	2.279	5.195	1.000	2.000	4.000	4.138	6.000	7.000
Processes -> Profitability	2.275	5.177	1.000	2.000	4.000	4.034	6.000	7.000
Technologies -> Human	1.391	1.936	2.000	6.000	7.000	6.310	7.000	7.000
Technologies -> Relational	2.269	5.148	1.000	2.000	4.000	3.828	6.000	7.000
Technologies -> Process	2.005	4.020	1.000	3.000	5.000	4.345	6.000	7.000
Technologies -> Innovation	2.094	4.384	1.000	3.000	4.000	4.207	6.000	7.000
Technologies -> Disclosure	2.024	4.096	1.000	2.000	4.000	3.897	6.000	7.000
Technologies - > Performance	1.861	3.463	1.000	3.000	6.000	4.966	6.000	7.000
Technologies -> Profitability	2.092	4.377	1.000	3.000	5.000	4.345	6.000	7.000
Disclosure -> Performance	1.976	3.904	1.000	2.000	4.000	3.759	5.000	7.000
Disclosure -> Profitability	1.844	3.399	1.000	2.000	4.000	3.552	5.000	7.000
Performance -> Profitability	2.172	4.719	1.000	2.000	5.000	4.172	6.000	7.000
Innovation (bought/leased)	2.068	4.278	1.000	1.000	3.000	3.276	5.000	7.000
Innovation -> Strategy	1.412	1.995	1.000	4.000	5.000	5.069	5.000	7.000
Innovation -> Human	1.618	2.618	1.000	5.000	5.000	5.241	6.000	7.000
Innovation -> Relational	1.936	3.749	1.000	4.000	6.000	5.034	6.000	7.000
Innovation -> Processes	1.698	2.882	1.000	4.000	5.000	4.897	6.000	7.000
Innovation -> Technologies	1.944	3.781	1.000	5.000	5.000	4.931	6.000	7.000
Innovation -> Disclosure	1.850	3.421	1.000	2.000	3.000	3.724	5.000	7.000
Innovation -> Performance	1.659	2.751	1.000	5.000	6.000	5.414	6.000	7.000
Innovation -> Profitability	1.911	3.650	1.000	5.000	6.000	5.310	7.000	7.000

Table A1f Survey: Descriptive Statistics

Appendix 2 – Survey Respondents

Company	Title	Education	Age	Gender	Work Experience Current Position	Total Leadership Experience	Stock Ownership
Company 1	Vicepresident	Master	41	F	3	11	No
Company 2	CFO	Master	48	M	10	15	Yes
Company 3	EVP	Bachelor	56	M	2	28	Yes
Company 4	Information Manager	Master	59	M	18	5	Yes
Company 5	CSO	Ph.D.	61	M	7	29	Yes
Company 6	Country manager	High-school	41	M	4	15	No
Company 7	CEO	Bachelor	33	M	6	6	Yes
Company 8	CEO	Master	58	F	3	20	Yes
Company 9	CFO	Master	35	M	1	7	Yes
Company 10	HR/IR-manager	Master	63	F	3	27	Yes
Company 11	Purchase Manager	Master	39	M	3	10	Yes
Company 12	Board Member	Master	58	M	15	33	Yes
Company 13	CEO	Post-doctoral	51	M	2	15	Yes
Company 14	Supply Chain Director	Master	55	M	4	25	Yes
Company 15	Managing Director	Ph.D.	42	M	1	6	Yes
Company 16	CEO	Bachelor	62	M	1	30	No
Company 17	Manager Investor Relations	Master	37	M	12	5	Yes
Company 18	Ceo	Master	53	M	15	20	Yes
Company 19	CEO	Bachelor	57	M	30	15	Yes
Company 20	Director of Marketing	Bachelor	57	M	8	30	Yes
Company 21	CEO	Post-doctoral	75	M	45	45	Yes
Company 22	CEO	Master	41	M	3	15	Yes
Company 23	CEO	Post-doctoral	58	M	15	20	Yes

Company 24	CFO	Master	49	M	8	15	Yes
Company 25	President	High-school	54	M	25	40	Yes
Company 26	CFO	Master	55	M	4	20	Yes
Company 27	VP. IR	Master	50	M	5	31	Yes
Company 28	Senior VP	Master	59	M	26	40	Yes
Company 29	Director IR	Master	57	M	15	25	Yes

Table A2 Detailed Information about the Survey Respondents

Appendix 3 – Key Terms

Topic		Resources (Code: 1)	Activities (Code: 2)	Effects (Code: 3)
Goals and Objectives	Employees	+ Employee certifications (Nielsen et al., 2006)	+ Presentations at universities (Nielsen et al., 2006) + Lectures (Rimmel et al., 2004) + Publications (Rimmel et al., 2004)	+ Employee development (Nielsen et al., 2006) + Employee well-being (Nielsen et al., 2006) + Employee share ownership (Rimmel et al., 2004)
	Customers	+ Availability of support department + Network of suppliers and distributors (Nielsen et al., 2006) + Network partner concept (Nielsen et al., 2006) + Client inflow (Rimmel et al., 2004) - Client outflow (Rimmel et al., 2004) + Foreign projects / clients (Rimmel et al., 2004) + Average order response time, from customer order until final delivery (MERITUM, 2002)	+ Meet-the-customer project (Nielsen et al., 2006) + Customer solutions (Rimmel et al., 2004) + Media exposure (Rimmel et al., 2004)	+ New customers + Old customers + Returning customers + Largest customers' shares of production (Rimmel et al., 2004)
	Processes	+ Number of processes + Description of network of suppliers and distributors (Nielsen et al., 2006) + Cross-functional teams (Nielsen et al., 2006) + Share / number of interdisciplinary projects of all projects (J. Mouritsen et al., 2001) + Share / number of projects including several departments / business units / sectors of company (Mouritsen et al., 2001) + Percent of critical processes that have a procedural manual (DMSTI, 2003)	+ Process measurement (Nielsen et al., 2006) + Content management + Project management capacity (Rimmel et al., 2004) + Information and communication within the company (Bukh et al., 2005)	+ Automatic data capturing (Nielsen et al., 2006) + Ideal employer (Rimmel et al., 2004) + Quality in delivery and solutions (Rimmel et al., 2004) + Reliability (Rimmel et al., 2004)

	Technologies	+ Software assets and licenses (Bukh et al., 2005) + IT systems (Bukh et al., 2005)	+ Licensing + IT capacity + Description and reason for investment in IT (Bukh et al., 2005)	+ Internal sharing of knowledge (Nielsen et al., 2006) + Number of web / home / page hits (Rimmel et al., 2004) + Working from home / teleworking / remote work (Bukh et al., 2005)
	R&D	+ Patents issued + Brands + Trademarks + Licenses	+ Innovate + Patents revealed + Innovation department (Rimmel et al., 2004)	+ Image survey product and knowledge development (Rimmel et al., 2004)
	Strategy	+ Appraisal interviews (Nielsen et al., 2006) + Number of jobs worldwide / globaly (Rimmel et al., 2004) + Flexibility (DMSTI, 2003) + Significant (DMSTI, 2003) + Expectations + Specification of the method of indicator formulation (DMSTI, 2003)	+ Project briefing and debriefing (Nielsen et al., 2006) + Employee course activities (Nielsen et al., 2006) + Ability to fulfill mission / vision (Rimmel et al., 2004) + Operations management + Check use of codified routines (DMSTI, 2003) + Investment / development area + Visualize (DMSTI, 2003)	+ Human resource orientation (Rimmel et al., 2004) + Environmental orientation (Rimmel et al., 2004) + Standards / quality certificates / certifications (ISO) (Mouritsen et al., 2001; Nielsen et al., 2006) + Certifications of other types (e.g. Microsoft) + Increase market share (DMSTI, 2003) + Meet requirements
Challenges	Employees	+ Availability of potential employees + Availability of part-time employees + Share of employees with updated development plan (Mouritsen et al., 2001)	+ Part-time employees + Number of customers who recommend the company (Nielsen et al., 2006) + 5 largest project customers' turnover (Nielsen et al., 2006) + 5 largest license sales (Nielsen et al., 2006) + Internships	+ Job assignments / projects (Nielsen et al., 2006) - Employee injuries / accidents / incidents (Rimmel et al., 2004) - Absence / leave due to illness / sickness (Rimmel et al., 2004; Nielsen et al., 2006) - Number of resignations (Nielsen et al., 2006) - Number of illnesses - Dependence on key employees (Nielsen et al., 2006)
	Customers	+ Support staff + Number of customers (Nielsen et al., 2006) - Complaints (Rimmel et al.,	+ Feedback statements + Feedback from customers (Nielsen et al., 2006) + Feedback from partners	- Number of reclamations / returns / refunds - Dependence on key customers (Nielsen et al., 2006)

		2004)	(Nielsen et al., 2006) + Education and training of customers (Nielsen et al., 2006)	- Dependence on distribution partners (Nielsen et al., 2006) - Dependence on independent partners' relationships (Nielsen et al., 2006)
	Processes	+ Employee benefits / reward systems + Own products' share of turnover (Mouritsen et al., 2001)	+ Open innovation system + Co-creation + Number of hours spent on internal process development (Nielsen et al., 2006) + Understanding customer needs (Nielsen et al., 2006) + Quality audits (Rimmel et al., 2004)	- Environmental effects: waste / organic components / electricity consumption / water consumption (Rimmel et al., 2004)
	Technologies	+ In-house development + IT expenses (Bukh et al., 2005)	- Office expenses / costs (Nielsen et al., 2006) - Computer expenses / costs (Nielsen et al., 2006) + Maintaining and expanding technology leadership (Nielsen et al., 2006)	+ Number of license owners
	R&D	+ Number of strategic partners (Nielsen et al., 2006)	+ Open innovation system members	+ Protection of intellectual property rights (Nielsen et al., 2006)
	Strategy	+ Value added / creation process (DMSTI, 2003) + Critical intangibles definition (DMSTI, 2003) + Strategic objectives (DMSTI, 2003) + Strategic efforts (DMSTI, 2003)	+ Data mining + Maintaining and expanding management / leadership + Number of engineering / social sciences internships (Rimmel et al., 2004) + Verifiable indicators / key terms (DMSTI, 2003)	+ Market share + Shareholder value added (Rimmel et al., 2004) + Economic society contribution (Rimmel et al., 2004) + External sharing of information / communication (Bukh et al., 2005)
Initiatives	Employees	+ Employee discounts / reductions + Number of employees (Nielsen et al., 2006) + Number of employees in product development (Nielsen et al., 2006) + Staff breakdown by departments (Nielsen et al., 2006) + Staff breakdown by age (Nielsen et al., 2006)	+ Training days per employee (Nielsen et al., 2006) + Training investment per employee (Nielsen et al., 2006) + Investment in personel / staf (Nielsen et al., 2006) + Incentive systems (Nielsen et al., 2006) + Training and education program (Nielsen et al., 2006)	+ Intermediate management (Nielsen et al., 2006) + Top management (Nielsen et al., 2006) + Customer relationships (Nielsen et al., 2006) + On-the-job skills development (Nielsen et al., 2006) + International travelling (Rimmel et al., 2004) + Future prospects regarding HR / employees investments

		+ Staff breakdown by nationality (Nielsen et al., 2006) + Staff breakdown by education (Nielsen et al., 2006) + International activities (Rimmel et al., 2004) + Pensions (Bukh et al., 2005) + Policies (Bukh et al., 2005) + Career opportunities (Bukh et al., 2005)	+ Further training (Rimmel et al., 2004) + Employee intake (Rimmel et al., 2004) + Job rotation (Rimmel et al., 2004) + New employees (Rimmel et al., 2004) + Mobility / internal recruiting (Rimmel et al., 2004)	/ development (Bukh et al., 2005)
	Customers	+ Test samples + Sales breakdown by segments (Nielsen et al., 2006) + Export's share of turnover (Mouritsen et al., 2001)	+ Open-house / visits at/by customers (Nielsen et al., 2006) + Participation in seminars / conferences (Nielsen et al., 2006) + Description of distribution strategy (Nielsen et al., 2006) + Cooperation with consultants (Rimmel et al., 2004) + Trend survey (Rimmel et al., 2004) + Focus group meetings (Rimmel et al., 2004) + Participation in research projects (Mouritsen et al., 2001)	+ Customer loyalty (Rimmel et al., 2004) + Image survey / impression (Rimmel et al., 2004) + Future prospects regarding relationational / customers / suppliers investments / development (Bukh et al., 2005)
	Processes	+ Knowledge agents (Nielsen et al., 2006)	+ Investment in process development (Nielsen et al., 2006) + Investment in product development / new product lines (Nielsen et al., 2006) + Process measurement (Nielsen et al., 2006) + User group seminars (Nielsen et al., 2006) + Number of strategic partners (Nielsen et al., 2006) + Product development / development process(Nielsen et al., 2006) + Product expansion (Nielsen et al., 2006)	+ Infrastructures / buildings + New machines + New process flow charts + Number of new projects + Future organizational prospects regarding investments / development (Bukh et al., 2005)
	Technol-	+ Bring-your-own device program	+ New software development	+ Internet-based IRC / Forums

	ogies	+ Description of IT systems (Nielsen et al., 2006) + Employees with technological ability / teleworking (Rimmel et al., 2004) + Shared knowledge databases on intranet (Rimmel et al., 2004)	+ Acquisition of reporting system + Work-flow and management system + Investment in IT / per employee (Rimmel et al., 2004; Nielsen et al., 2006) + Number of updates (Rimmel et al., 2004)	+ Helpdesk enquiries the same day / month / year (Rimmel et al., 2004) + Future prospects regarding IT / users investments / development (Bukh et al., 2005)
	R&D	+ Educational programs + Description of current research projects	+ Investment in innovation as a % of total turnover (Nielsen et al., 2006) + R&D / research and development expenses (Nielsen et al., 2006) + R&D / research and development expenses / sales (Nielsen et al., 2006) + Patents filed (Rimmel et al., 2004)	+ Number of new products + Number of improved products + Future prospects regarding R&D / research and development (Bukh et al., 2005)
	Strategy	+ Vision statement / code of conduct / strategic map (DMSTI, 2003) + Dividends + Shared knowledge documents on intranet (Rimmel et al., 2004) + Key drivers / indicators (DMSTI, 2003)	+ Progress statements + Development projects (Rimmel et al., 2004) + Environmental control system improvements (Rimmel et al., 2004) + Quality control system improvements (Rimmel et al., 2004) + Monitoring activities (DMSTI, 2003)	+ New alliances / partners + Future strategic prospects regarding investments / development (Bukh et al., 2005)
Key Resources	Employees	+ Number of employees (Nielsen et al., 2006) + Full-time employees (Nielsen et al., 2006) + Software developers (Nielsen et al., 2006) + Engineers (Nielsen et al., 2006) + Software experience (Nielsen et al., 2006) + Employee education / degree (Nielsen et al., 2006)	+ Mergers / acquisitions + Goodwill + Intangibles + Plant development + New plants - Plant closure + Skills + Knowledge work / intellectual work	+ Culture (Nielsen et al., 2006) + Employee loyalty (Nielsen et al., 2006) + Management value (Nielsen et al., 2006) + Processes and infrastructure (Nielsen et al., 2006) + Number of unsolicited applications (Nielsen et al., 2006) + Satisfactory workplace (Ni-

		+ Employee age (Nielsen et al., 2006) + Number of certified employees (Nielsen et al., 2006) + Turnover (Nielsen et al., 2006) + Growth rate in turnover (Nielsen et al., 2006)		elsen et al., 2006) + Net revenue / profit / income per employee (Rimmel et al., 2004; Nielsen et al., 2006) + Staff turnover (Nielsen et al., 2006) + Experience
	Customers	+ Duration of customer relations (Nielsen et al., 2006) + Guests / visitors (Nielsen et al., 2006)	+ Active project customers (Nielsen et al., 2006) + Turnover (Nielsen et al., 2006)	+ Customer satisfaction (Nielsen et al., 2006)
	Processes	Number of PC / workstations per employee (Nielsen et al., 2006) + Investor relations team	+ Active projects + Off-shoring + Outsourcing	+ Creativity + Motivation
	Technologies	+Number of servers (Nielsen et al., 2006) + Office space in meters / feet (Nielsen et al., 2006) +Intranet + Cloud technologies / platforms	+ Number of sold licenses (Nielsen et al., 2006)	+ Employee satisfaction with "office premises" (Nielsen et al., 2006)
	R&D	+ Patent rights (Rimmel et al., 2004) + Intellectual property rights	+ Registered patents	+ Number of innovations + Number of class action suits / infringements won - Number of class action suits / infringements lost
	Strategy	+ Internally recruited managers (Rimmel et al., 2004) + Intangible / immaterial / knowledge resources (DMSTI, 2003)	+ Undertake / change / improve / develop / act upon (DMSTI, 2003) + Cost-benefit analysis (DMSTI, 2003)	+ Prizes and awards + Design and development of intangibles (DMSTI, 2003)
Disclosure	Reporting Interest	+ Interim reports + Additional reports + Quarterly reports + Prospectuses + Accounting system with a focus on financial and non-financial indicators (DMSTI, 2003)	+ Introduce + Report / disclose + IPO / Initial public offering + Voluntary reporting / disclosure + Reply to issue / statement + Interest / motivation / ambition in reporting / disclo-	+ Inform / reveal / disseminate / share knowledge + Make public + Transparency + Compliance to / agreement with requirements and guidelines

	sure + Frequency of reporting (DMSTI, 2003)

Table A3 Key Terms

Appendix 4 – Diverse Historical Rates

Year	USD	DKK	NOK	SEK
2013	1.00	5.61	5.87	6.51
2012	1.00	5.80	5.82	6.77
2011	1.00	5.37	5.61	6.51
2010	1.00	5.62	6.04	7.20
2009	1.00	5.36	6.28	7.65
2008	1.00	5.11	5.65	6.60
2007	1.00	5.44	5.85	6.75
2006	1.00	5.94	6.41	7.37
2005	1.00	6.01	6.45	7.49
2004	1.00	5.99	6.75	7.35

Table A4a Mean Yearly Historical Exchange Rates *(International Monetary Fund 2015)*

Year	USD
2013	1
2012	1.0159
2011	1.0457
2010	1.0627
2009	1.0906
2008	1.0910
2007	1.1377
2006	1.1613
2005	1.2076
2004	1.2432

Table A4b Mean Yearly Deflation Rates *(Coinnews Media Group 2015)*

Appendix 5 – Abnormal Returns Breakdown

Country	NACE Rev 2. MS	Mean MCAP/TA	Rank
DK	M - Professional, scientific and technical activities	3.23	7
DK	Q - Human health and social work activities	2.11	7
NO	M - Professional, scientific and technical activities	1.72	7
SW	G - Wholesale and retail trade	2.73	7
SW	Q - Human health and social work activities	2.57	7
US	G - Wholesale and retail trade	1.19	7
US	M - Professional, scientific and technical activities	1.49	7
DK	C - Manufacturing	1.49	6
NO	J - Information and communication	0.95	6
SW	R - Arts, entertainment and recreation	1.40	6
US	J - Information and communication	1.13	6
DK	R - Arts, entertainment and recreation	1.14	5
NO	C - Manufacturing	0.77	5
SW	M - Professional, scientific and technical activities	1.05	5
US	C - Manufacturing	1.12	5
DK	B - Mining and quarrying	1.02	4
DK	H - Transportation and storage	1.00	4
NO	B - Mining and quarrying	0.74	4
SW	B - Mining and quarrying	1.01	4
SW	J - Information and communication	0.93	4
US	B - Mining and quarrying	0.93	4
US	H - Transportation and storage	0.82	4
DK	J - Information and communication	0.75	3
NO	F - Construction	0.61	3
SW	C - Manufacturing	0.82	3
US	Q - Human health and social work activities	0.77	3
DK	G - Wholesale and retail trade	0.43	2

NO	H - Transportation and storage	0.34	2
SW	F - Construction	0.54	2
US	F - Construction	0.63	2
DK	F - Construction	0.24	1
DK	K - Financial and insurance activities	0.05	1
NO	K - Financial and insurance activities	0.07	1
SW	H - Transportation and storage	0.22	1
SW	K - Financial and insurance activities	0.07	1
US	K - Financial and insurance activities	0.13	1
US	R - Arts, entertainment and recreation	0.56	1
NO	G - Wholesale and retail trade	-	-
NO	Q - Human health and social work activities	-	-
NO	R - Arts, entertainment and recreation	-	-

Table A5a Industrial Market Capitalization and Competitiveness Rank Breakdown by NACE Rev. 2 Main Sector and Country (2004 to 2013)

Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
No. of Observations	1766	2144	2492	3849	4400	4825	5215	5621	5799	5734

Table A5b Industrial Sample Breakdown by Year

Appendix 6 – Abnormal Returns per Country

The distribution of the respondent companies' abnormal returns is presented per country in Figure A6a.

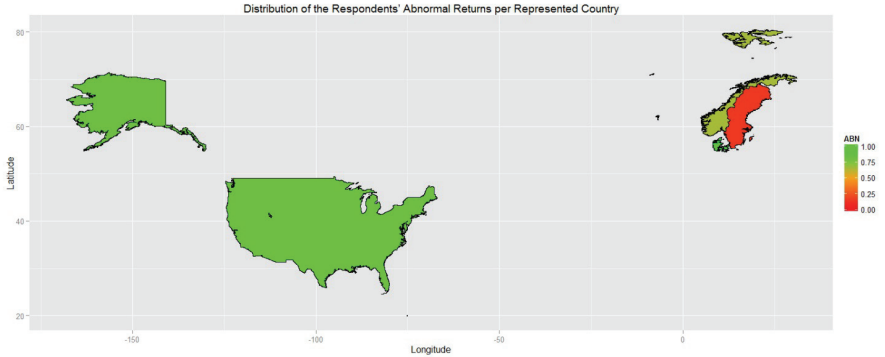


Figure A6a Distribution of the Respondents' Abnormal Returns per Represented Country

As indicated before, the abnormal returns measure ranges from 0 to 1, where 0 indicates negative returns and 1 indicates positive returns. The results indicate that the represented companies from Denmark (2 respondents) attained the highest positive average of abnormal returns, 1, the United States (11 respondents) an average of 0.82, Norway (3 respondents) an average of 0.67 and Sweden (13 respondents) attained the lowest represented average of 0.15. In terms of ranking, Denmark scores first, US second, Norway third and Sweden fourth.

The distribution of the respondent companies' perceived profitability is presented per country in Figure A6b. In similarity with the abnormal returns variable indicated above, the perceived profitability measure ranges from 0 to 1, where 0 indicates negative profitability and 1 indicates positive profitability. The results indicate that the represented companies from Denmark (2 respondents) attained the highest positive average of abnormal returns, but felt the least profitable (0.5 compared to 1 in actual realizations). The United States (11 respondents) attained an average of perceived profitability of 0.63 compared to their actual realizations of 0.82 in abnormal returns. These two countries belong in great part to the "Pessimistic High Earners". Norway (3 respondents) attained an average of 0.67 in both perceived profitability and abnormal returns, making them part of most realistic group, "The Realistic High Earners". The Swedish companies indicated an average perceived profitability level of 0.46, compared to their lowest represented average of abnormal returns of 0.15, making them good candidates for the "Optimistic Low Earners Group".

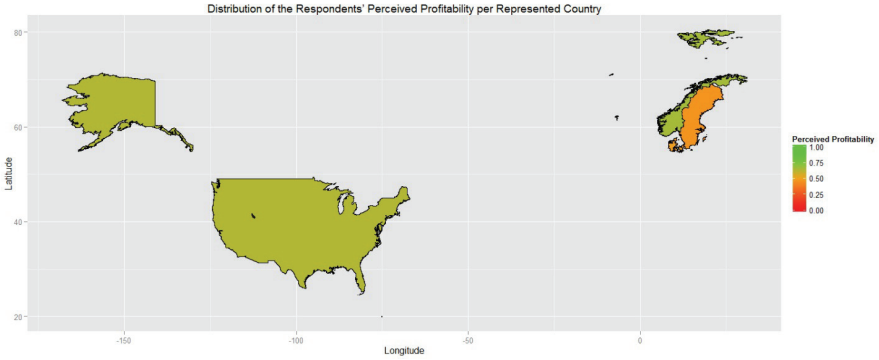


Figure A6b Distribution of the Respondents' Perceived Profitability per Represented Country

Figure A6c summarizes the representation of the formulated management groups per country.

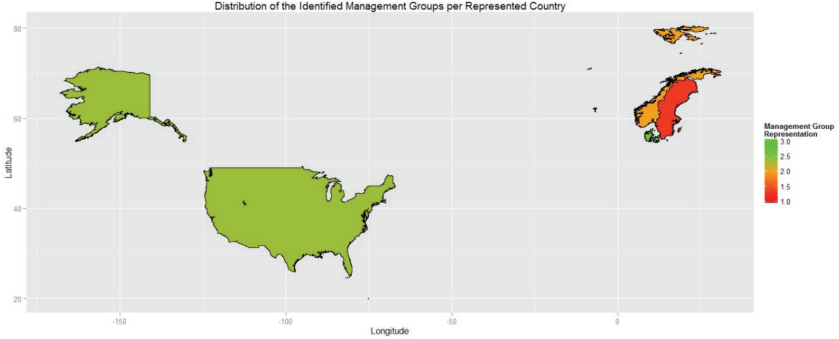


Figure A6c Distribution of the Identified Management Groups per Represented Country

The countries marked with green (Pessimistic High Earners, represented by a score of 3) and orange (Realistic High Earners, represented by a score of 2) are over-represented in the profitable groups, whilst the country marked with red, Sweden, is the location from where the majority of the surveyed companies are not profitable (Optimistic Low Earners, represented by a score of 1). The figure indicates that companies from Sweden are positive to a small extent, as two of the companies belong to the “Pessimistic High Earners” group. The same applies for Norway, where 2 out of 3 companies belong to the high earners (Pessimistic respectively Realistic). Denmark, with its 2 companies belongs to both high earners group. From the US, only 1 company belongs to the “Optimistic Low Earners” group.

Appendix 7 – Diverse Latent Class Regression Outputs and Tests

```
Conditional item response (column) probabilities,
 by outcome variable, for each class (row)

$Abn_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.0000 1.0000
class 2:     0 1.0000 0.0000
class 3:     0 0.1725 0.8275

$Area_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.4444 0.5556
class 2:     0 0.9152 0.0848
class 3:     0 0.3216 0.6784

$Out_Prof_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.7778 0.2222
class 2:     0 0.4706 0.5294
class 3:     0 0.0000 1.0000

Estimated class population shares
 0.3103 0.4396 0.25

Predicted class memberships (by modal posterior prob.)
 0.3103 0.4483 0.2414

=========================================================
Fit for 3 latent classes:
=========================================================
2 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)    185.81346      0.0555 3347.917         0
AbnRank        -38.00162      0.2220 -171.175         0
=========================================================
3 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)    128.47719      0.0555 2314.891         0
AbnRank        -23.30079      0.2220 -104.958         0
=========================================================
number of observations: 29
number of estimated parameters: 22
residual degrees of freedom: 4
maximum log-likelihood: -32.367

AIC(3): 108.734
BIC(3): 138.8145
X^2(3): 0.8683942 (Chi-square goodness of fit)
```

Table A7a Abnormal Returns Rank as Concomitant Variable

```
Model 9: llik = -47.0959 ... best llik = -47.0959
Model 10: llik = -58.86193 ... best llik = -47.0959
Conditional item response (column) probabilities,
 by outcome variable, for each class (row)

$Out_Prof_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.7778 0.2222
class 2:     0 0.0000 1.0000
class 3:     0 0.4824 0.5176

$Area_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.4444 0.5556
class 2:     0 0.2065 0.7935
class 3:     0 1.0000 0.0000

$IC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.2222 0.7778
class 2:     0 0.3585 0.6415
class 3:     0 0.5860 0.4140

Estimated class population shares
 0.3103 0.2607 0.4289

Predicted class memberships (by modal posterior prob.)
 0.3103 0.2414 0.4483

=========================================================
Fit for 3 latent classes:
=========================================================
2 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)    120.82809     1.35563   89.131         0
AbnRank        -21.97707     0.49650  -44.264         0
=========================================================
3 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)    126.19340     1.35567   93.085         0
AbnRank        -23.45686     0.49628  -47.266         0
=========================================================
number of observations: 29
number of estimated parameters: 22
residual degrees of freedom: 4
maximum log-likelihood: -47.0959

AIC(3): 138.1918
BIC(3): 168.2723
X^2(3): 0.1953211 (Chi-square goodness of fit)
```

Table A7b Basic Profitability Model (29 Observations)

```
Model 9: llik = -5388.867 ... best llik = -4709.589
Model 10: llik = -5216.989 ... best llik = -4709.589
Conditional item response (column) probabilities,
 by outcome variable, for each class (row)

$Out_Prof_Bin
           Pr(1)  Pr(2)  Pr(3)
class 1:       0 0.7778 0.2222
class 2:       0 0.4824 0.5176
class 3:       0 0.0000 1.0000

$Area_Bin
           Pr(1)  Pr(2)  Pr(3)
class 1:       0 0.4444 0.5556
class 2:       0 1.0000 0.0000
class 3:       0 0.2065 0.7935

$IC_Bin
           Pr(1)  Pr(2)  Pr(3)
class 1:       0 0.2222 0.7778
class 2:       0 0.5860 0.4140
class 3:       0 0.3585 0.6415

Estimated class population shares
 0.3103 0.4289 0.2607

Predicted class memberships (by modal posterior prob.)
 0.3103 0.4483 0.2414

=========================================================
Fit for 3 latent classes:
=========================================================
2 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)    126.73622     0.13557  934.863         0
AbnRank        -23.55555     0.04963 -474.645         0
=========================================================
3 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)    121.37092     0.13556  895.315         0
AbnRank        -22.07577     0.04965 -444.640         0
=========================================================
number of observations: 2900
number of estimated parameters: 22
residual degrees of freedom: 4
maximum log-likelihood: -4709.589

AIC(3): 9463.179
BIC(3): 9594.573
X^2(3): 19.53139 (Chi-square goodness of fit)
```

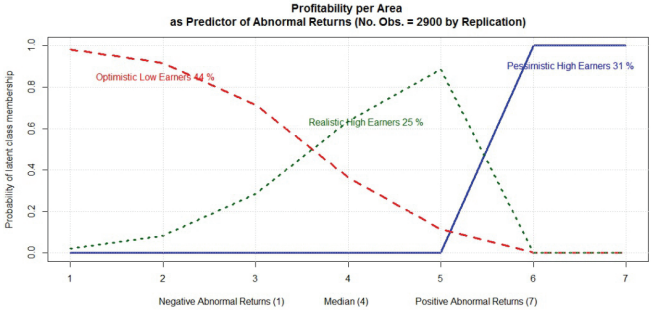


Figure A7 The Replicated Data Set Indicating the Same Profitability Traits as the Model Based on the Original Sample, cf. Figure 4.1.3b

Table A7c Basic Profitability Model (2900 Observations – Simulation)

```
> EMM1
Conditional item response (column) probabilities,
 by outcome variable, for each class (row)

$ABN_Bin
          Pr(1) Pr(2) Pr(3)
class 1:      0     0     1
class 2:      0     1     0
class 3:      0     0     1

$Out_Prof_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.6332 0.3668
class 2:      0 0.5000 0.5000
class 3:      0 0.2208 0.7792

$Area_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.2538 0.7462
class 2:      0 0.9167 0.0833
class 3:      0 0.5480 0.4520

$IC_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.3693 0.6307
class 2:      0 0.5000 0.5000
class 3:      0 0.3388 0.6612

$S_HC_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.2513 0.7487
class 2:      0 0.4167 0.5833
class 3:      0 0.1119 0.8881

$S_RC_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.7476 0.2524
class 2:      0 0.4167 0.5833
class 3:      0 0.3413 0.6587

$S_PC_Bin
          Pr(1) Pr(2) Pr(3)
class 1:      0 0.506 0.494
class 2:      0 0.250 0.750
class 3:      0 0.440 0.560

$S_TC_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.2513 0.7487
class 2:      0 0.2500 0.7500
class 3:      0 0.2215 0.7785

$S_I_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 1.0000 0.0000
class 2:      0 0.1667 0.8333
class 3:      0 0.1236 0.8764

$S_D_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.3777 0.6223
class 2:      0 0.5000 0.5000
class 3:      0 0.4412 0.5588

$S_PE_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.3803 0.6197
class 2:      0 0.5833 0.4167
class 3:      0 0.1102 0.8898

$S_PR_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.4952 0.5048
class 2:      0 0.2500 0.7500
class 3:      0 0.4494 0.5506

$HC_RC_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.3779 0.6221
class 2:      0 0.5000 0.5000
class 3:      0 0.5506 0.4494

$HC_PC_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.6308 0.3692
class 2:      0 0.5833 0.4167
class 3:      0 0.2229 0.7771

$HC_I_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.7487 0.2513
class 2:      0 0.5833 0.4167
class 3:      0 0.1212 0.8788

$HC_D_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.6341 0.3659
class 2:      0 0.3333 0.6667
class 3:      0 0.1105 0.8895

$HC_PE_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.5071 0.4929
class 2:      0 0.5000 0.5000
class 3:      0 0.2200 0.7800

$HC_PR_Bin
          Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.6192 0.3808
class 2:      0 0.5000 0.5000
class 3:      0 0.1233 0.8767

Estimated class population shares
 0.2714 0.4138 0.3148

Predicted class memberships (by modal posterior prob.)
 0.2759 0.4138 0.3103

Estimated class population shares
 0.2714 0.4138 0.3148

Predicted class memberships (by modal posterior prob.)
 0.2759 0.4138 0.3103

=========================================================
Fit for 3 latent classes:
=========================================================
2 / 1
             Coefficient  Std. error   t value  Pr(>|t|)
(Intercept)     91.54820           0 318791379         0
AbnRank        -25.55824           0 -27837320         0
=========================================================
3 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)      5.29728     0.00712  744.452         0
AbnRank         -0.91303     0.01073 -85.110         0
=========================================================
number of observations: 2900
number of estimated parameters: 112
residual degrees of freedom: 2788
maximum log-likelihood: -29900.08

AIC(3): 60024.15
BIC(3): 60693.07
X^2(3): 26651724 (Chi-square goodness of fit)
```

Table A7d Total Model (Part 1) (2900 Observations - Simulation)

```
> EMM2c
Conditional item response (column) probabilities,
 by outcome variable, for each class (row)

$ABN_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.3345 0.6655
class 2:      0 1.0000 0.0000
class 3:      0 0.0000 1.0000

$Out_Prof_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.1349 0.8651
class 2:      0 0.7132 0.2868
class 3:      0 0.8571 0.1429

$Area_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.6007 0.3993
class 2:      0 1.0000 0.0000
class 3:      0 0.2857 0.7143

$IC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.4676 0.5324
class 2:      0 0.4264 0.5736
class 3:      0 0.2857 0.7143

$RC_PC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.2014 0.7986
class 2:      0 1.0000 0.0000
class 3:      0 0.5714 0.4286

$RC_I_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.1996 0.8004
class 2:      0 0.8605 0.1395
class 3:      0 0.4286 0.5714

$RC_D_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.2014 0.7986
class 2:      0 0.7132 0.2868
class 3:      0 0.4286 0.5714

$RC_PE_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.0665 0.9335
class 2:      0 0.7171 0.2829
class 3:      0 0.5714 0.4286

$RC_PR_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.0665 0.9335
class 2:      0 0.5736 0.4264
class 3:      0 0.4286 0.5714

$PC_I_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.1331 0.8669
class 2:      0 0.5736 0.4264
class 3:      0 1.0000 0.0000

$PC_D_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.0683 0.9317
class 2:      0 0.7132 0.2868
class 3:      0 0.8571 0.1429

$PC_PE_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.0665 0.9335
class 2:      0 0.7171 0.2829
class 3:      0 0.7143 0.2857

$PC_PR_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.1331 0.8669
class 2:      0 0.5736 0.4264
class 3:      0 0.7143 0.2857

$TC_I_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.1996 0.8004
class 2:      0 0.4302 0.5698
class 3:      0 1.0000 0.0000

$TC_D_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.0683 0.9317
class 2:      0 0.7132 0.2868
class 3:      0 1.0000 0.0000

$TC_PE_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.1349 0.8651
class 2:      0 0.7132 0.2868
class 3:      0 0.8571 0.1429

$TC_PR_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:      0 0.0000 1.0000
class 2:      0 0.7171 0.2829
class 3:      0 0.8571 0.1429

Estimated class population shares
 0.5182 0.2404 0.2414

Predicted class memberships (by modal posterior prob.)
 0.5172 0.2414 0.2414

=============================================================
Fit for 3 latent classes:
=============================================================
2 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)      1.61393     0.14463   11.159         0
AbnRank         -0.83034     0.06043  -13.740         0
=============================================================
3 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)     -9.10785     0.96080   -9.479         0
AbnRank          1.52331     0.15316    9.946         0
=============================================================
number of observations: 2900
number of estimated parameters: 106
residual degrees of freedom: 2794
maximum log-likelihood: -23265.99

AIC(3): 46743.97
BIC(3): 47377.05
X^2(3): 4879259 (Chi-square goodness of fit)
```

Table A7e Total Model (Part 2) (2900 Observations - Simulation)

```
> EMM3b
Conditional item response (column) probabilities,
 by outcome variable, for each class (row)

$ABN_Bin
         Pr(1) Pr(2) Pr(3)
class 1:     0     0     1
class 2:     0     1     0
class 3:     0     0     1

$Out_Prof_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.5385 0.4615
class 2:     0 0.5000 0.5000
class 3:     0 0.0000 1.0000

$Area_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.3846 0.6154
class 2:     0 0.9167 0.0833
class 3:     0 0.5000 0.5000

$IC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.1538 0.8462
class 2:     0 0.5000 0.5000
class 3:     0 1.0000 0.0000

$I_D_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.3077 0.6923
class 2:     0 0.2500 0.7500
class 3:     0 0.2500 0.7500

$I_PE_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.2308 0.7692
class 2:     0 0.5000 0.5000
class 3:     0 0.5000 0.5000

$I_PR_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.2308 0.7692
class 2:     0 0.5000 0.5000
class 3:     0 0.5000 0.5000

$D_PE_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.6154 0.3846
class 2:     0 0.4167 0.5833
class 3:     0 0.0000 1.0000

$D_PR_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.6154 0.3846
class 2:     0 0.4167 0.5833
class 3:     0 0.0000 1.0000

$PE_PR_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.5385 0.4615
class 2:     0 0.4167 0.5833
class 3:     0 0.5000 0.5000

Estimated class population shares
 0.4483 0.4138 0.1379

Predicted class memberships (by modal posterior prob.)
 0.4483 0.4138 0.1379

=========================================================
Fit for 3 latent classes:
=========================================================
2 / 1
             Coefficient  Std. error       t value  Pr(>|t|)
(Intercept)    510.3980           0  7.020474e+17         0
AbnRank       -128.0659           0 -5.871780e+16         0
=========================================================
3 / 1
             Coefficient  Std. error       t value  Pr(>|t|)
(Intercept)   282.18603           0  1.802737e+17         0
AbnRank       -62.70871           0 -8.632705e+15         0
=========================================================
number of observations: 2900
number of estimated parameters: 64
residual degrees of freedom: 2836
maximum log-likelihood: -15283.21

AIC(3): 30694.42
BIC(3): 31076.66
X^2(3): 125145.2 (Chi-square goodness of fit)
```

Table A7f Total Model (Part 3) (2900 Observations – Simulation)

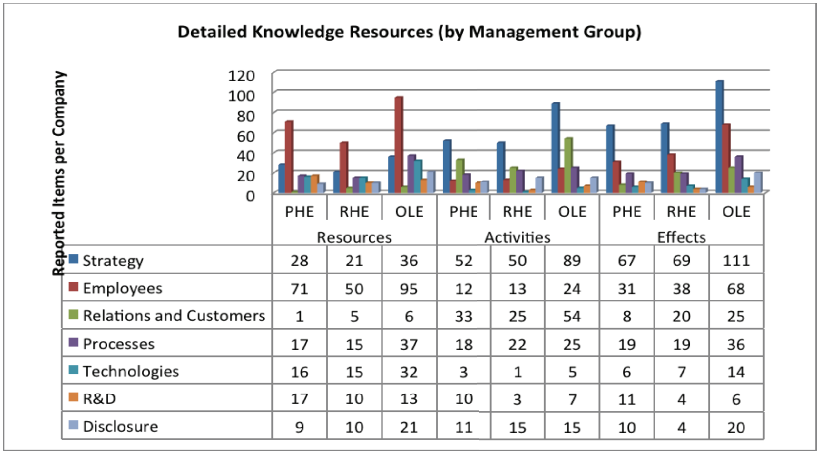
```
Model 9: llik = -25492.58 ... best llik = -24158.68
Model 10: llik = -25795.74 ... best llik = -24158.68
Conditional item response (column) probabilities,
 by outcome variable, for each class (row)

$ABN_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.0000 1.0000
class 2:     0 0.9125 0.0875
class 3:     0 0.0739 0.9261

$Out_Prof_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 1.0000 0.0000
class 2:     0 0.4975 0.5025
class 3:     0 0.2875 0.7125

$Area_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.0000 1.0000
class 2:     0 1.0000 0.0000
class 3:     0 0.4278 0.5722

$IC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.3333 0.6667
class 2:     0 0.5847 0.4153
class 3:     0 0.2841 0.7159

$Val_Chain_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.6667 0.3333
class 2:     0 0.5035 0.4965
class 3:     0 0.2824 0.7176

$Val_Shop_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.6667 0.3333
class 2:     0 0.3328 0.6672
class 3:     0 0.2861 0.7139

$Val_Netw_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 1.0000 0.0000
class 2:     0 0.4160 0.5840
class 3:     0 0.7153 0.2847

$IBL_PR_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.6667 0.3333
class 2:     0 0.4202 0.5798
class 3:     0 0.4255 0.5745

$I_D_Bin
```

```
$I_D_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.6667 0.3333
class 2:     0 0.2496 0.7504
class 3:     0 0.2146 0.7854

$I_HC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.6667 0.3333
class 2:     0 0.3328 0.6672
class 3:     0 0.0715 0.9285

$I_RC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.6667 0.3333
class 2:     0 0.7514 0.2486
class 3:     0 0.2124 0.7876

$I_PC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 1.0000 0.0000
class 2:     0 0.3320 0.6680
class 3:     0 0.0722 0.9278

$I_TC_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 1.0000 0.0000
class 2:     0 0.3328 0.6672
class 3:     0 0.0000 1.0000

$I_PE_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 1.0000 0.0000
class 2:     0 0.5817 0.4183
class 3:     0 0.0721 0.9279

$I_S_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 0.3333 0.6667
class 2:     0 0.4983 0.5017
class 3:     0 0.1438 0.8562

$I_PR_Bin
         Pr(1)  Pr(2)  Pr(3)
class 1:     0 1.0000 0.0000
class 2:     0 0.5817 0.4183
class 3:     0 0.0721 0.9279

Estimated class population shares
 0.1034 0.4144 0.4821

Predicted class memberships (by modal posterior prob.)
 0.1034 0.4138 0.4828
```

```
================================================================
Fit for 3 latent classes:
================================================================
2 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)     12.42937     2.36782    5.249         0
AbnRank         -2.56859     0.36539   -7.030         0
================================================================
3 / 1
             Coefficient  Std. error  t value  Pr(>|t|)
(Intercept)      6.18375     2.50855    2.465     0.014
AbnRank         -0.79085     0.39715   -1.991     0.047
================================================================
number of observations: 2900
number of estimated parameters: 100
residual degrees of freedom: 2800
maximum log-likelihood: -24158.68

AIC(3): 48517.36
BIC(3): 49114.61
X^2(3): 4309142 (Chi-square goodness of fit)
```

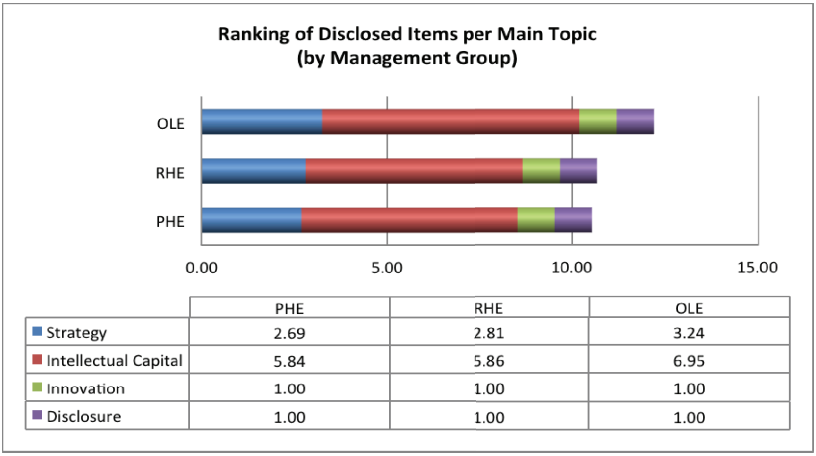
Table A7g Model Value Creation and Innovation (2900 Observations - Simulation)

Appendix 8 – Key Terms: Supplemental Charts



	Resources			Activities			Effects		
	PHE	RHE	OLE	PHE	RHE	OLE	PHE	RHE	OLE
Strategy	28	21	36	52	50	89	67	69	111
Employees	71	50	95	12	13	24	31	38	68
Relations and Customers	1	5	6	33	25	54	8	20	25
Processes	17	15	37	18	22	25	19	19	36
Technologies	16	15	32	3	1	5	6	7	14
R&D	17	10	13	10	3	7	11	4	6
Disclosure	9	10	21	11	15	15	10	4	20

Figure A8a Detailed Knowledge Resources (by Management Profile)



	PHE	RHE	OLE
Strategy	2.69	2.81	3.24
Intellectual Capital	5.84	5.86	6.95
Innovation	1.00	1.00	1.00
Disclosure	1.00	1.00	1.00

Figure A8b Ranking of Disclosed Items per Main Topic (by Management Profile)

Appendix 9 – Analyses of Variance

Anova: Two-Factor without Replication per Management Profile

SUMMARY	*Count*	*Sum*	*Average*	*Variance*
Strategy	3	-6.53	-2.17667	0.218233
IC	3	4.98	1.66	0.9559
Innovation	3	-11.59	-3.86333	0.108433
Disclosure	3	-7.87	-2.62333	0.770233
PHE	4	-5.23	-1.3075	5.603758
RHE	4	-9.53	-2.3825	4.263225
OLE	4	-6.25	-1.5625	7.699225

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	51.11709	3	17.03903	64.64245	5.85E-05	4.757063
Columns	2.524067	2	1.262033	4.787885	0.057162	5.143253
Error	1.581533	6	0.263589			
Total	55.22269	11				

Table A9a ANOVA of Entangled Topics across Perceived and Disclosed Topics – Per Management Profile

Two-Factor Analysis of Variance without Replication – Per Management Group						
SUMMARY	*Count*	*Sum*	*Average*	*Variance*		
Strategy	3.00	8.48	2.83	0.07		
Employees	3.00	15.81	5.27	0.42		
Relations	3.00	13.30	4.43	0.63		
Processes	3.00	16.82	5.61	0.51		
Technologies	3.00	11.68	3.89	0.31		
R&D	3.00	3.00	1.00	0.00		
Disclosure	3.00	3.00	1.00	0.00		
OLE	7.00	26.95	3.85	4.94		
RHE	7.00	23.29	3.33	3.09		
PHE	7.00	21.85	3.12	3.04		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows (Variables)	64.57	6	10.76	68.184	1.4271E-08	2.67
Columns (Management Groups)	1.97	2	0.98	6.2389	0.01388214	3.35
Error	1.89	12	0.16			
Total	68.44	20				

Table A9b ANOVA of Disentangled Knowledge Resources (All) – Per Management Profile

References

Abeysekera, Indra, Guthrie, James (2004). "Human Capital Reporting in a Developing Nation", The British Accounting Review, Vol. 36, No. 3, pp. 251-268.

Abhayawansa, Subhash, Guthrie, James (2010). "Intellectual Capital and the Capital Market: A Review and Synthesis", Journal of Human Resource Costing & Accounting, Vol. 14, No. 3, pp. 196-226.

Agarwala, Vineet, Taffler, Richard J. (2007). "Twenty-Five Years of the Taffler z-Score Model: Does it really have Predictive Ability?", Accounting and Business Research, Vol. 37, No. 4, pp. 285 - 300.

AICPA, American Institute of CPAs (2013). Business Reporting Frameworks. Available: http://www.aicpa.org/InterestAreas/FRC/AccountingFinancialReporting/EnhancedBusinessReporting/Pages/EBRFramework.aspx [2013].

Albert, Paul S., Dodd, Lori E. (2004). "A Cautionary Note on the Robustness of Latent Class Models for Estimating Diagnostic Error without a Gold Standard", Biometrics, Vol. 60, No. 2, pp. 427-435.

Alcaniz, Leire, Gomez-Bezares, Fernando, Roslender, Robin (2011). "Theoretical Perspectives on Intellectual Capital: A Backward Look and a Proposal for Going Forward", Accounting Forum, Vol. 35, No. 2, pp. 104-117.

Altman, E.I. (2000). Predicting Financial Distress of Companies: revisiting the z-score and ZETA models [Homepage of Stern School of Business, New York University],[Online]. Available: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.25.1884&rep=rep1&type=pdf.

Alwert, Kay, Bornemann, Manfred, Will, Markus (2009). "Does Intellectual Capital Reporting Matter to Financial Analysts?", Journal of Intellectual Capital, Vol. 10, No. 3, pp. 354-368.

American Institute of CPAs (2013). Gartner/EBRC KPI Initiative. Available: http://www.aicpa.org/InterestAreas/FRC/AccountingFinancialReporting/EnhancedBusinessReporting/Pages/GartnerEBRCKPIInitiative.aspx [2013].

Andreou, Andreas N., Bontis, Nick (2007). A Model for Resource Allocation using Operational Knowledge Assets.

Andriessen, Daniel (2003). "Legacy: Methods for the Valuation and Measurement of Intangibles", in Making Sense of Intellectual Capital, pp. 54-123. Boston, Butterworth-Heinemann.

Arthur, Brian W. (1994). Increasing Returns and Path Dependence in the Economy, University of Michigan Press, Ann Arbor, MI.

Baginski, Stephen P., Clinton, Sarah B., Mcguire, Sean T. (2014). "Forward-Looking Voluntary Disclosure in Proxy Contests", Contemporary Accounting Research, Vol. 31, No. 4, pp. 1008-1046.

Barney, Jay B. (1991). "Firm Resources and Sustained Competitive Advantage", Journal of Management, Vol. 17, No. 1, pp. 99-120.

Bhatti, Waheed Akbar, Zaheer, Arshad (2014). "The Role of Intellectual Capital in Creating and Adding Value to Organizational Performance: A Conceptual Analysis". The Electronic Version of Knowledge Management, Vol. 12, No. 3, pp. 187-194.

Boedker, Christina, Mouritsen, Jan, Guthrie, James (2008). "Enhanced Business Reporting: International Trends and Possible Policy Directions", Journal of Human Resource Costing & Accounting, Vol. 12, No. 1, pp. 14-25.

Bontis, Nick, Crossan, Mary M., Hulland, John (2002). "Managing an Organizational Learning System by Aligning Stocks and Flows", Journal of Management Studies, Vol. 39, No. 4, pp. 0022-2380.

Bryman, Allan (1997). Kvantitet Och Kvalitet i Samhällsvetenskaplig Forskning, Studentlitteratur, Lund.

Bukh, Per Nikolaj, Marr, Bernard, Mouritsen, Jan (2005). "A Reporting Perspective on Intellectual Capital", in Perspectives on Intellectual Capital, ed. Marr, Bernard, pp. 69-81., Elsevier Butterworth Heinemann.

Bukh, Per Nikolaj, Mouritsen, Jan (2005). "Managing Organizational Knowledge Networks in a Professional Services Firm", in Challenges and Issues in Knowledge Management, eds. Buono, Anthony and Poulfelt, Flemming, pp. 3-21. Greenwich, Connecticut and Copenhagen, Denmark, Information Age Publishing and Copenhagen Business School.

Bukh, Per Nikolaj, Nielsen, Christian, Gormsen, Peter, Mouritsen, Jan (2005). "Disclosure of Information on Intellectual Capital in Danish IPO Prospectuses", Accounting, Auditing & Accountability Journal, Vol. 18, No. 6, pp. 713-732.

Bukh, Per Nikolaj, Johanson, Ulf (2003). "Research and Knowledge Interaction: Guidelines for Intellectual Capital Reporting", Journal of Intellectual Capital, Vol. 4, No. 4, pp. 576-587.

Campisi, Domenico, Costa, Roberto (2008). "A DEA-Based Method to Enhance Intellectual Capital Management", Knowledge and Process Management, Vol. 15, No. 3, pp. 170-183.

Carmeli, Abraham (2001). "High- and Low-Performance Firms: Do they have Different Profiles of Perceived Core Intangible Resources and Business Environment?", Technovation, Vol. 21, No. 10, pp. 661-671.

Chandler, Alfred D. Jr (2009). "History and Management Practice and Thought: An Autobiography", Journal of Management History, Vol. 15, No. 3, pp. 236-260.

Chang, Chia-Chin, Hung, Shiu-Wan, Huang, Sin-Yi (2013). "Evaluating the Operational Performance of Knowledge-based Industries: The Perspective of Intellectual Capital". Qual Qaunt, Vol. 47. pp. 1367-1383.

Chen, Chung-Jen, Shih, Hsi-An, Yang, Su-Yeh (2009). "The Role of Intellectual Capital in Knowledge Transfer", Engineering Management, IEEE, Vol. 56, No. 3, pp. 402-411.

Chen, Shuai, Wang, Duxanxu (2010). "High Performance Work Systems and Organizational Innovative Capabilities in the PRC: The Mediating Role of Intellectual Capital", PICMET, 2010 Proceedings of PICMET '10.

Chen, Yuh-Jen (2010). "Development of a Method for Ontology-Based Empirical Knowledge Representation and Reasoning", Decision Support Systems, Vol. 50, No. 1, pp. 1-20.

Cheng, Meng-Yuh, Lin, Jer-Yan, Hsiao, Tzy-Yih, Lin, Thomas W. (2010). "Invested Resource, Competitive Intellectual Capital, and Corporate Performance", Journal of Intellectual Capital, Vol. 11, No. 4, pp. 433-450.

Coase, Ronald H. (1992). "The Institutional Structure of Production", The American Economic Review, Vol. 82, No. 4, pp. 713-719.

Cohen, Wesley M., Klepper, Steven (1996). "A Reprize of Size and R&D", The Economic Journal, Vol. 106, No. 434, pp. 925 - 951.

Cohen, Wesley M., Levinthal, Daniel A. (1990). "Absorptive Capacity: A New Perspective on Learning and Innovation", Administrative Science Quarterly, Vol. 35, No. 1, pp. 128-152.

Coinnews Media Group, L. (2015). U.S. Inflation Calculator. Available: http://www.usinflationcalculator.com/.

Cormier, Denis, Ledoux, Marie-Josee, Magnan, Michel (2009). "The use of Web Sites as a Disclosure Platform for Corporate Performance", International Journal of Accounting Information Systems, Vol. 10, No. 1, pp. 1-24.

Craighead, Christopher W., Hult, Thomas G. M., Ketchen, David J. Jr (2009). "The Effects of Innovation-Cost Strategy, Knowledge, and Action in the Supply Chain on Firm Performance", Journal of Operations Management, Vol. 27, pp. 405-421.

Cuganesan, Suresh (2005). "Intellectual Capital-in-Action and Value Creation: A Case Study of Knowledge Transformations in an Innovation Project", Journal of Intellectual Capital, Vol. 6, No. 3, pp. 357-373.

Cummings, Peter (2009). "The Relative Merits of Risk Ratios and Odds Ratios", Arch Pediatr Adolesc Med, Vol. 163, No. 5, pp. 438-445.

Curado, Carla, Henriques, Lopes, Bontis, Nick (2011). "Intellectual Capital Disclosure Payback", Management Decision, Vol. 49, No. 7, pp. 1080 - 1098.

Darroch, Jenny, McNaughton, Rod (2002). "Examining the Link between Knowledge Management Practices and Types of Innovation", Journal of Intellectual Capital, Vol. 3, No. 3, pp. 210-222.

Dickens, Linda (1998). "What HRM Means for Gender Equality", Human Resource Management Journal, Vol.8, No.1.

Drnevich, Paul, Shanley, Mark (2005a). "Multi-Level Issues for Strategic Management Research: Further Reflections", in Multi-Level Issues in Strategy and Methods: Research in Multi-Level Issues, eds. Dansereau, Fred, Yam-

marino, Francis J., Drnevich, Paul and Shanley, Mark, pp. 189-194. Oxford, Elsevier Ldt.

Drnevich, Paul, Shanley, Mark (2005b). "Multi-Level Issues for Strategic Management Research: Implications for Creating Value and Competitive Advantage", in Multi-Level Issues in Strategy and Methods: Research in Multi-Level Issues, eds. Dansereau, Fred, Yammarino, Francis J., Drnevich, Paul and Shanley, Mark, pp. 117-161. Oxford, Elsevier Ldt.

Dumay , John, Cai , Linlin (2015). "Using Content Analysis as a Research Methodology for Investigating Intellectual Capital Disclosure: A Critique", Journal of Intellectual Capital, Vol. 16, No. 1, pp. 121 - 155.

Dumay, John C. (2009). "Intellectual Capital Measurement: A Critical Approach", Journal of Intellectual Capital, Vol. 10, No. 2, pp. 190-210.

Dunne, Audrey, Buttler, Tom (2004). "Beyond Knowledge Management" Introducing A Framework for Learning Management Systems".

Edvinsson, Leif (1997). "Developing Intellectual Capital at Skandia: Understanding Knowledge Management", Long Range Planning, Vol. 30, No. 3, pp. 366-373.

Edvinsson, Leif, Lin, Carol Yeh-Yun (2011). National Intellectual Capital, A Comparison of 40 Countries, Springer Science + Business Media, LLC, New York, NY.

Edvinsson, Leif, Malone, Michael S. (1997). Intellectual Capital, the Proven Way to Establish Your Company's Real Value by Measuring its Hidden Brainpower, Piatkus, London.

Enhanced Business Reporting Committee (2013). MD&A Taxonomy [Homepage of EBRC], [Online]. Available: http://bigfoot.corefiling.com/yeti/resources/yeti-gwt/Yeti.jsp [2013].

Foss, Nikolai, Ishikawa, Ibuki (2007). "Peripheral Vision: Towards a Dynamic Resource-Based View: Insights from Austrian Capital and Entrepreneurship Theory", Organization Studies, Vol. 28, No. 5, pp. 749-772.

Francis, Louise, Flynn, Matt (2010). Data Mining Handbook, Casualty Actuarial Society E-Forum, Available:
http://www.casact.net/pubs/forum/10spforum/CompleteS10.pdf#page=5.

García-Ayuso, Manuel (2003). "Factors Explaining the Inefficient Valuation of Intangibles", Accounting, Auditing & Accountability Journal, Vol. 16, No. 1, pp. 57-69.

Gibbs, Graham R. (2007). Analyzing Qualitative Data, Sage Publications, Thousand Oaks, California, USA.

Glaser, Barney, Strauss, Anselm (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research, Aldine Publishing Company, Chicago, IL, USA.

Gottschalk, Petter (2005). Strategic Knowledge Management Technology, Idea Group Publishing, Hershey, PA.

Grant, Robert M. (1991). "The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation", California Management Review, Vol. 33, No. 3, pp. 114-135.

Grimaldi, Michele, Cricelli, Livio, Rogo, Francesco (2015). "Assessment and Management of Intellectual Capital: A Single Case Study on the Construction and Implementation of an IC Index". Knowledge and Process Management, vol. 22, No. 4, pp. 235-249.

Grant, Robert M. (1996). "Prospering in Dynamically-Competitive Environments: Organizational Capability as Knowledge Integration", Organization Science, Vol. 7, No. 4, pp. 375-387.

Guthrie, James, Petty, Richard, Johanson, Ulf (2001). "Sunrise in the Knowledge Economy", Accounting, Auditing and Accountability Journal, Vol. 14, No. 4, pp. 365-382.

Guthrie, James, Petty, Richard, Yongvanich, Kittiya, Ricceri, Federica (2004). "Using Content Analysis as a Research Method to Inquire into Intellectual Capital Reporting", Journal of Intellectual Capital, Vol. 5, No. 2, pp. 282-293.

Guthrie, James, Ricceri, Federica, Dumay, John (2012). "Reflections and Projections: A Decade of Intellectual Capital Accounting Research", The British Accounting Review, Vol. 44, No. 2, pp. 68-82.

Hall, R. (1992). "The Strategic Analysis of Intangible Resources", Strategic Management Journal, Vol. 13, No. March 1991, pp. 135-144.

Harlow, Harold, Imam, Syed (2006). "The Effect of Tacit Knowledge Management on Innovation: Matching Technology to Strategies", 2006 Technology Management for the Global Future - PICMET 2006 Conference, pp. 1236 - 1250.

Hatcher, Larry (1994). "Assessing Scale Reliability with Coefficient Alpha", in A Step-by-Step Approach to using SAS for Factor Analysis and Structural Equation Modeling, pp. 129-140, SAS Institute Inc.

Hedström, Peter, Ylikoski, Petri (2010)."Causal Mechanisms in the Social Sciences". Annual Review of Sociology, Vol. 36, pp. 49-67.

Hensley, Rhonda L. (1999). "A Review of Operations Management Studies using Scale Development Techniques", Journal of Operations Management, Vol. 17, No. 3, pp. 343-358.

Herremans, Irene M., Isaac, Robert G., Kline, Theresa J. B., Nazari, Jamal A. (2010). "Intellectual Capital and Uncertainty of Knowledge: Control by Design of the Management System", Journal of Business Ethics, Vol. 98, No. 4, pp. 627-640.

Herremans, Irene M., Isaac, Robert G., Kline, Theresa J. B., Nazari (2011). "Intellectual Capital and Uncertainty of Knowledge: Control by Design of the Management System". Journal of Business Ethics, Vol. 98, pp. 627-640.

Hervás-Oliver, José Luis, Dalmau-Porta, Juan Ignacio (2007). "Which IC Components Explain National IC Stocks?", Journal of Intellectual Capital, Vol. 8, No. 3, pp. 444-469.

Hisrich, Robert D., Peters, Michael P., Shepherd, Dean A. (2008). Entrepreneurship, Seventh edn. McGraw Hill International, New York.

Holland, John (2009). "Looking Behind the Veil: Invisible Corporate Intangibles, Stories, Structure and the Contextual Information Content of Disclosure", Qualitative Research in Financial Markets, Vol. 1, No. 3, pp. 152-187.

Hoskisson, R. E., Hitt, Michael, Wan, P. W., Yiu, D. (1999). "Theory and Research in Strategic Management: Swings of a Pendulum", Journal of Management, Vol. 25, No. 3, pp. 417-456.

Hsu, I-Chieh, Sabherwal, Rajiv (2012). "Relationship between Intellectual Capital and Knowledge Management: An Empirical Investigation". Decision Sciences, Vol. 43, No. 3, pp. 489-524.

Hsu, Li-Chang, Wang, Chao-Hung (2010). "Clarifying the Effect of Intellectual Capital on Performance: The Mediating Role of Dynamic Capability", British Journal of Management, Vol. 1, No. 2, pp. 1-27.

International Monetary Fund, O. (2015). IMF Exchange Rates. Available: http://www.imf.org/external/np/fin/ert/GUI/Pages/CountryDataBase.aspx.

Ittner, Christopher D. (2008). "Does Measuring Intangibles for Management Purposes Improve Performance? A Review of the Evidence", Accounting and Business Research, Vol. 38, No. 3, pp. 261-272.

Johnson, Marilyn F., Kasznik, Ron, Nelson, Karen K. (2001). "The Impact of Securities Litigation Reform on the Disclosure of Forward-Looking Information by High Technology Firms", Journal of Accounting Research, Vol. 39, No. 2, pp. 297-327.

Joshi, Mahesh, Ubha, Dharminder Singh (2009). "Intellectual Capital Disclosures: The Search for a New Paradigm in Financial Reporting by the Knowledge Sector of Indian Economy", Electronic Journal of Knowledge Management, Vol. 7, No. 5, pp. 575-582.

Kalkan, Adnan, Bozkurt, Ozlem Cetinkaya, Arman, Mutulu (2014). "The Impacts of Intellectual Capital, Innovation and Organizational Strategy on Firm Performance". Procedia – Social and Behavioral Sciences, vol 150, pp. 700-707.

Kaplan, Robert S., Norton, David P. (1996). The Balanced Scorecard, Translating Strategy into Action, Harvard Business School Press, Boston.

Kaplan, Robert S., Norton, David P. (2000). "Having Trouble with Your Strategy? then Map it.", Harvard Business Review, Vol. 78, No. 5, pp. 167-177.

Kaplan, Robert S., Norton, David P. (2004). "How Strategy Maps Frame an Organization's Objectives", Financial Executive, Vol. 2, No. 2, pp. 40-45.

Karlsson, Christer (ed) 2009, Researching Operations Management Routledge, New York.

Kianto, Aino, Andreeva, Tatiana, Pavlov, Yaroslav (2013). "The Impact of Intellectual Capital Management on Company Competitiveness and Financial Performance". Knowledge Management Research & Practice, Vol. 11, pp. 112-122.

Kianto, Aino, Ritala, Paavo, Spender, John-Christopher, Vanhala, Mika (2014). "The Interaction of Intellectual Capital Assets and Knowledge Management Practices in Organizational Value Creation", Journal of Intellectual Capital, Vol. 15, No. 3, pp. 362 - 375.

Kirzner, Israel (2000). The Driving Force on the Market: Essays in Australian Economics, Routledge, New York.

Kramar, Robin, Murthy, Vijaya, Guthrie, James (2011). "Accounting for Human Capital and Organizational Effectiveness", in The Oxford Handbook of Human Capital, eds. Burton-Jones, Spender, J.C.

Lazonick, William (2005). "The Innovative Firm", in The Oxford Handbook of Innovation, eds. Fagerberg, Jan, Mowery, David C. and Nelson, Richard R., pp. 29-55. New York, Oxford University Press Inc.

Lee, Laurence Lock, Guthrie, James (2010). "Visualising and Measuring Intellectual Capital in Capital Markets: A Research Method", Journal of Intellectual Capital, Vol. 11, No. 1, pp. 4-22.

Lerro, Antonio, Linzalone, Roberto, Schiuma, Giovanni (2014). "Managing Intellectual Capital Dimensions for Organizational Value Creation", Journal of Intellectual Capital, Vol. 15, No. 3, pp. 350 - 361.

Lev, Baruch, Cañibano, Leandro, Marr, Bernard (2005). "An Accounting Perspective on Intellectual Capital", in Perspectives on Intellectual Capital, ed. Marr, Bernard, pp. 42-55. Oxford, Elsevier.

Liebeskind, JP (1996). "Knowledge, Strategy, and the Theory of the Firm", Strategic Management Journal, Vol. 17, pp. 93-107.

Lindquist, K. (2015). SAS FAQ: How can I estimate relative risk in SAS using proc genmod for common outcomes in cohort studies? [Homepage of Institute for Digital Research and Education, UCLA], [Online]. Available: http://www.ats.ucla.edu/stat/sas/faq/relative_risk.htm.

Ling, Ya-Hui (2013). "The Influence of Intellectual Capital on Organizational performance – Knowledge Management as a Moderator". Asia Pacific Journal of Management, Vol. 30, pp. 937-964.

Linzer, Drew A., Lewis, Jeffrey (2013). "PoLCA: Polytomous Variable LatentClass Analysis ", R Package Version 1.4.

Loasby, Brian (1999). Knowledge, Institutions and Evolution in Economics, Routledge, New York.

Lowe, Alan (2004). "Postsocial Relations: Toward a Performative View of Accounting Knowledge", Accounting, Auditing & Accountability Journal, Vol. 17, No. 4, pp. 604-628.

MacKenzie, Donald A. (2006). An Engine, Not a Camera, MIT Press, Cambridge, MA, USA.

Mackey, Alison, Barney, Jay B. (2005). "Developing Multi-Level Theory in Strategic Management: The Case of Managerial Talent and Competitive Advantage", in Multi-Level Issues in Strategy and Methods: Research in Multi-Level Issues, eds. Dansereau, Fred, Yammarino, Francis J., Drnevich, Paul and Shanley, Mark, pp. 163-175. Oxford, Elsevier Ldt.

Marr, Bernard, Starovic, Danka (2003). Understanding Corporate Value: Managing and Reporting Intellectual Capital, Chartered Institute of Management Accountants, CIMA, London.

Martín-Alcázar, Fernando, Romero-Fernández, Pedro, Sánchez-Gardey, Gonzalo (2012). "Transforming Human Resource Management Systems to Cope with Diversity", Journal of Business Ethics, Vol. 107, No. 4, pp. 511-531.

Martín-de-Castro, Gregorio, Delgado-Verde, Miriam, Lopez-Saez, Pedro, Navas-Lopez, Jose E. (2010). "Towards 'an Intellectual Capital-Based View' of the Firm: Origins and Nature", Journal of Business Ethics, Vol. 98, No. 4, pp. 649-662.

Martínez-Torres, M. R. (2006). "A Procedure to Design a Structural and Measurement Model of Intellectual Capital: An Exploratory Study", Information & Management, Vol. 43, No. 5, pp. 617-626.

McAdam, R., Moffett, S., Hazlett, S. a., Shevlin, M. (2010). "Developing a Model of Innovation Implementation for UK SMEs: A Path Analysis and Ex-

planatory Case Analysis", International Small Business Journal, Vol. 28, No. 3, pp. 195-214.

McDermott, C. (1999). "Managing Radical Product Development in Large Manufacturing Firms: A Longitudinal Study", Journal of Operations Management, Vol. 17, No. 6, pp. 631-644.

Mendenhall, William, Sincich, Terry (2011). A Second Course in Statistics: Regression Analysis, Seventh edn. Pearson, Boston.

MERITUM (2002). Guidelines for Managing and Reporting on Intangibles – Intellectual Capital Report, Available: http://www.pnbukh.com/site/files/pdf_filer/MERITUM_Guidelines.pdf.

Merkley, Kenneth J. (2014). "Narrative Disclosure and Earnings Performance: Evidence from R&D Disclosures", The Accounting Review, Vol. 89, No. 2.

Montemari, Marco, Nielsen, Christian (2013). "The Role of Causal Maps in Intellectual Capital Measurement and Management". Journal of Intellectual Capital, Vol. 14, No. 4, pp. 522-546.

Mouritsen, J. (2015). Making Intellectual Capital Count [Homepage of EIASM],[Online]. Available: http://www.eiasm.org/UserFiles/Mouritsen_Key%20Note%20Speech%20Making%20IC%20count%20Sept%202015.pdf.

Mouritsen, Jan (2003). "Intellectual Capital and the Capital Market: The Circulability of Intellectual Capital", Accounting, Auditing & Accountability Journal, Vol. 16, No. 1, pp. 18-30.

Mouritsen, Jan (2006). "Problematising Intellectual Capital Research: Ostensive Versus Performative IC", Accounting, Auditing & Accountability Journal, Vol. 19, No. 6, pp. 820-841.

Mouritsen, Jan, Bukh, Per Nikolaj, Flagstad, Kirsten, Thorbjørnsen, Stefan, Rosenkrandts Johanesen, Mette, Kontis, Sita, Thorsgaard Larsen, Heine, Nielsen, Christian, Kjærgaard, Isa, Krag, Lotte, Jeppsen, Gustav, Haisler, Jens, Stakemann, Benedikte (2003). Intellectual Capital Statements – The New Guideline, Danish Ministry of Science, Technology and Innovation, Available: http://pure.au.dk//portal/files/32340329/guideline_uk.pdf.

Mouritsen, Jan, Bukh, Per Nikolaj, Larsen, H. T., Johansen, M. R. (2002). "Developing and Managing Knowledge through Intellectual Capital Statements", Journal of Intellectual Capital, Vol. 3, No. 1, pp. 10-29.

Mouritsen, Jan, Larsen, H. Thorsgaard, Bukh, P. N. (2001). "Intellectual Capital and the 'Capable Firm': Narrating, Visualising and Numbering for Managing Knowledge", Accounting, Organizations and Society, Vol. 26, pp. 735-762.

Mouritsen, Jan, Larsen, H. Thorsgaard, Bukh, P. N. (2005). "Dealing with the Knowledge Economy: Intellectual Capital Versus Balanced Scorecard", Journal of Intellectual Capital, Vol. 6, No. 1, pp. 8-27.

Murthy, Vijaya, Mouritsen, Jan (2011a). "The Performance of Intellectual Capital: Mobilising Relationships between Intellectual and Financial Capital in a Bank", Accounting, Auditing & Accountability Journal, Vol. 24, No. 5, pp. 622-646.

Murthy, Vijaya, Mouritsen, Jan (2011b). "The Performance of Intellectual Capital: Mobilising Relationships between Intellectual and Financial Capital in a Bank", Accounting, Auditing & Accountability Journal, Vol. 24, No. 5, pp. 622-646.

Nelson, Richard R., Winter, Sidney G. (1982). An Evolutionary Theory of Economic Change, Belknap Press of Harvard University Press, Cambridge, Massachussets.

Nelson, Richard R., Phelps, Edmund S. (1966). "Investment in Humans, Technological Diffusion, and Economic Growth", The American Economic Review, Vol. 56, No. 1/2, pp. 69-75.

New York Stock Exchange Commission (2010). "Final New York Stock Exchange Corporate Governance Rules".

Nielsen, Christian, Bukh, Per Nikolaj, Mouritsen, Jan, Johansen, Mette Rosenkrandz, Gormsen, Peter (2006). "Intellectual Capital Statements on their Way to the Stock Exchange: Analyzing New Reporting Systems", Journal of Intellectual Capital, Vol. 7, No. 2, pp. 221-240.

Penrose, Edith T. (1995). "Excerpt from 'the Theory of the Growth of the Firm'", in Knowledge and Strategy, ed. Zack, Michael H., 3rd edn. Woburn, MA, Butterworth-Heinemann.

Peteraf, Margaret (2005). "A Resource-Based Lens on Value Creation, Competitive Advantage, and Multi-Level Issues in Strategic Management Research", in Multi-Level Issues in Strategy and Methods: Research in Multi-Level Issues, eds. Dansereau, Fred, Yammarino, Francis J., Drnevich, Paul and Shanley, Mark, pp. 177-188. Oxford, Elsevier.

Petty, Richard, Ricceri, Federica, Guthrie, James (2008). "Intellectual Capital: A User's Perspective", Management Research News, Vol. 31, No. 6, pp. 434-447.

Phillips, Nelson, Sewell, Graham, Jaynes, Steve (2008). "Applying Critical Discourse Analysis in Strategic Management Research", Organizational Research Methods, Vol. 11, No. 4, pp. 770-789.

Phusavat, Kongkiti, Comepa, Narongsak, Sitko-Lutek, Agnieszka, Ooi, Keng-Boon (2011). "Interrelationships between Intellectual Capital and Performance", Industrial Management & Data Systems, Vol. 111, No 6, pp. 810–829.

Porter, Michael (1980). Competitive Strategy: Techniques for Analyzing Industries and Competitors, The Free Press, New York.

Quinn, James Brian, Anderson, Philip, Finkelstein, Sydney (1996). "Leveraging Intellect", Academy of Management, Vol. 10, No. 3, pp. 7-27.

Reed, Kira Kristal, Lubatkin, Michael, Srinivasan, Narasimhan (2006). "Proposing and Testing an Intellectual Capital-Based View of the Firm", Journal of Management Studies, Vol. 43, No. 4, pp. 0022-2380.

Reed, Richard, Storrud-Barnes, Susan, Jessup, Len (2012). "How Open Innovation Affects the Drivers of Competitive Advantage: Trading the Benefits of IP Creation and Ownership for Free Invention", Management Decision, Vol. 50, No. 1, pp. 58-73.

Remenyi, Dan, Williams, Brian, Money, Arthur, Swartz, Ethne (1998). Doing Research in Business and Management: An Introduction to Process and Method, The Cromwell Press Ltd, Trowbridge.

Ricardo, D. (1926 [1821]). Principles of Political Economy and Taxation, Everyman, London.

Rimmel, Gunnar, Persson, Oskar, Lindstrii, Emma, Blom, Pontus (2004). "The Danish Guidelines on Intellectual Capital Reporting Towards A European Perspective on Human Resource Disclosures?", 6th SNEE Conference on Economic Integration in Europe, No. May.

Rodgers, Waymond (2007). "Problems and Resolutions to Future Knowledge-Based Assets Reporting", Journal of Intellectual Capital, Vol. 8, No. 2, pp. 205-215.

Roos, Johan, Roos, Göran, Dragonetti, Nicola Carlo, Edvinsson, Leif (1997). Intellectual Capital, Navigating the New Business Landscape, Macmillan, Basingstoke.

Roslender, Robin, Fincham, Robin (2004). "Intellectual Capital Accounting in the UK: A Field Study Perspective", Accounting, Auditing & Accountability Journal, Vol. 17, No. 2, pp. 178-209.

Rylander, Anna, Peppard, Joe (2003). "From Implementing Strategy to Embodying Strategy: Linking Strategy, Identity and Intellectual Capital", Journal of Intellectual Capital, Vol. 4, No. 3, pp. 316-331.

Salvatore, Dominick (2012). Managerial Economics in a Global Economy, 7th edn. Oxford University Press, New York.

Schumpeter, Joseph A. (2003 [á pub 1912]). "The Theory of Economic Development", in Joseph Alios Schumpeter, ed. Backhous, Jürgen Netherlands, Kluwer Academic Publishers.

Schwartz, Norbert, Hippler, Hans-Jürgen (2004). "Response Alternatives: The Impact of their Choice and Presentation Order", in Measurement Errors in Surveys, eds. Biemer, Paul, Groves, Robert M., Lyberg, Lars E., Mathiowetz, Nancy A. and Sudman, Seymour, pp. 41 -56. New Jersey, John Wiley & Sons, Inc.

Scott, Richard W. (1998). Organizations: Rational, Natural and Open Systems, Prentice Hall, New Jersey.

Seleim, Ahmed A. S., Khalil, Omar E. M. (2011). "Understanding the Knowledge Management – Intellectual Capital Relationship: A Two-way Analysis". Journal of Intellectual Capital, Vol. 12, No. 4, pp. 586-614.

Serenko, Alexander, Bontis, Nick, Hull, Emily (2011). "Practical Relevance of Knowledge Management and Intellectual Capital Scholarly Research: Books as Knowledge Translation Agents", Knowledge and Process Management, Vol. 18, No. 1, pp. 1-9.

Slack, Nigel, Lewis, Michael (2003). Operations Strategy, Financial Times Prentice Hall, New York.

Smith, Keith (2005). "Measuring Innovation", in The Oxford Handbook of Innovation, eds. Fagerberg, Jan, Mowery, David C. and Nelson, Richard R., pp. 148-177. New York, Oxford University Press.

Sonnier, Blaise M. (2008). "Intellectual Capital Disclosure: High-Tech Versus Traditional Sector Companies", Journal of Intellectual Capital, Vol. 9, No. 4, pp. 705-722.

Stabell, Charles B., Fjeldstad, Øystein D. (1998). "Configuring Value for Competitive Advantage: On Chains, Shops and Networks", Strategic Management Journal, Vol. 19, No. November 1996, pp. 413-437.

Stewart, Thomas A. (1997). Intellectual Capital, the New Wealth of Organizations, Nicholas Brealey Publishing, London.

Storey, David J. (1994). Understanding the Small Business Sector, Routledge, New York.

St-Pierre, Josée, Audet, Josée (2011). "Intangible Assets and Performance: Analysis on Manufacturing SMEs", Journal of Intellectual Capital, Vol. 12, No. 2, pp. 202-223.

Subramaniam, Mohan, Youndt, Mark a. (2005). "The Influence of Intellectual Capital on the Types of Innovative Capabilities.", Academy of Management Journal, Vol. 48, No. 3, pp. 450-463.

Surroca, Jordi, Tribo, Joseph A., Waddock, Sandra (2010). "Corporate Responsibility and Financial Performance: The Role of Intangible Resources", Strategic Management Journal, Vol. 31, No. September 2009, pp. 463-490.

Sveiby, K. (2010). Methods for Measuring Intangible Assets. Available: http://www.sveiby.com/articles/IntangibleMethods.htm.

Swart, Juani (2006). "Intellectual Capital: Disentangling an Enigmatic Concept", Journal of Intellectual Capital, Vol. 7, No. 2, pp. 136-159.

Tavakol, Mohsen, Dennick, Reg (2011). "Making Sense of Cronbach's Alpha", International Journal of Medical Education, Vol. 2, pp. 53 - 55.

Tayles, Mike, Pike, Richard H., Sofian, Saudah (2007). "Intellectual Capital, Management Accounting Practices and Corporate Performance: Perceptions of Managers", Accounting, Auditing & Accountability Journal, Vol. 20, No. 4, pp. 522-548.

Teece, David J. (1984). "Economic Analysis and Strategic Management", California Management Review, Vol. XXVI, No. 3, pp. 87-110.

Teece, David J., Pisano, Gary, Shuen, A. M. Y. (1997). "Dynamic Capabilities and Strategic Management", Strategic Management Journal, Vol. 18, No. 7, pp. 509-533.

Trueman, Brett (2014). Professor of Accounting, Personal Interview on May 1, Los Angeles, California, USA: UCLA Anderson School of Management.

Tseng , Kuo-An, Lin, Ching-I, Yen , Szu-Wei (2015). "Contingencies of Intellectual Capitals and Financial Capital on Value Creation: Moderation of Business Cycles", Journal of Intellectual Capital, Vol. 16, No. 1, pp. 156 - 173.

Valladares Soler, Luis Enrique, Celestino, Diego Jesús (2007). "Evaluating the Scope of IC in Firms' Value", Journal of Intellectual Capital, Vol. 8, No. 3, pp. 470-493.

Verspagen, Bart (2005). "Innovation and Economic Growth", in The Oxford Handbook of Innovation, eds. Fagerberg, Jan, Mowery, David C. and Nelson, Richard R., pp. 487-513. New York, Oxford University Press.

Wang, Pei (2013). Non-Axiomatic Logic: A Model of Intelligent Reasoning, World Scientific Publishing Company, Singapore, SGP.

Whetten, David A. (1989). "What Constitutes a Theoretical Contribution?", Academy of Management Review, Vol. 14, No. 4, pp. 490 - 495.

White, Gregory, Lee, Alina, Tower, Greg (2007). "Drivers of Voluntary Intellectual Capital Disclosure in Listed Biotechnology Companies", Journal of Intellectual Capital, Vol. 8, No. 3, pp. 517-537.

Wiig, Karl M. (1997). "Integrating Intellectual Capital and Knowledge Management", Long Range Planning, Vol. 30, No 3, pp. 399-405.

Williams, Roy (2006). "Narratives of Knowledge and Intelligence... Beyond the Tacit and Explicit", Journal of Knowledge Management, Vol. 10, No. 4, pp. 81-99.

Woodhams, Carol, Lupton, Ben (2009). "Analysing Gender-Based Diversity in SMEs", Scandinavian Journal of Management, Vol. 25, No. 2, pp. 203-213.

World Intellectual Capital Initiative (2013a). WICI Framework. Available: http://www.wici-global.com/framework [2013].

World Intellectual Capital Initiative (2013b). WICI The World's Business Reporting Network. Available: http://www.wici-global.com/ [2013].

Yang, Suechin, Kang, Hsin-Hong (2008). "Is Synergy always Good? Clarifying the Effect of Innovation Capital and Customer Capital on Firm Performance in Two Contexts", Technovation, Vol. 28, No. 10, pp. 667-678.

Youndt, Mark A., Subramaniam, Mohan, Snell, Scott A. (2004). "Intellectual Capital Profiles: An Examination of Investments and Returns", Journal of Management Studies, Vol. 41, No. 2, pp. 0022-2380.

Zander, Udo, Kogut, Bruce (1995). "Knowledge and the Speed of the Transfer and Imitation of Organizational Capabilities: An Empirical Test", Organization Science, Vol. 6, No. 1, pp. 76-92.

TITLER I PH.D.SERIEN:

2004

1. Martin Grieger
Internet-based Electronic Marketplaces and Supply Chain Management

2. Thomas Basbøll
LIKENESS
A Philosophical Investigation

3. Morten Knudsen
Beslutningens vaklen
En systemteoretisk analyse of moderniseringen af et amtskommunalt sundhedsvæsen 1980-2000

4. Lars Bo Jeppesen
Organizing Consumer Innovation
A product development strategy that is based on online communities and allows some firms to benefit from a distributed process of innovation by consumers

5. Barbara Dragsted
SEGMENTATION IN TRANSLATION AND TRANSLATION MEMORY SYSTEMS
An empirical investigation of cognitive segmentation and effects of integrating a TM system into the translation process

6. Jeanet Hardis
Sociale partnerskaber
Et socialkonstruktivistisk casestudie af partnerskabsaktørers virkelighedsopfattelse mellem identitet og legitimitet

7. Henriette Hallberg Thygesen
System Dynamics in Action

8. Carsten Mejer Plath
Strategisk Økonomistyring

9. Annemette Kjærgaard
Knowledge Management as Internal Corporate Venturing
– a Field Study of the Rise and Fall of a Bottom-Up Process

10. Knut Arne Hovdal
De profesjonelle i endring
Norsk ph.d., ej til salg gennem Samfundslitteratur

11. Søren Jeppesen
Environmental Practices and Greening Strategies in Small Manufacturing Enterprises in South Africa
– A Critical Realist Approach

12. Lars Frode Frederiksen
Industriel forskningsledelse
– på sporet af mønstre og samarbejde i danske forskningsintensive virksomheder

13. Martin Jes Iversen
The Governance of GN Great Nordic
– in an age of strategic and structural transitions 1939-1988

14. Lars Pynt Andersen
The Rhetorical Strategies of Danish TV Advertising
A study of the first fifteen years with special emphasis on genre and irony

15. Jakob Rasmussen
Business Perspectives on E-learning

16. Sof Thrane
The Social and Economic Dynamics of Networks
– a Weberian Analysis of Three Formalised Horizontal Networks

17. Lene Nielsen
Engaging Personas and Narrative Scenarios – a study on how a user-centered approach influenced the perception of the design process in the e-business group at AstraZeneca

18. S.J Valstad
Organisationsidentitet
Norsk ph.d., ej til salg gennem Samfundslitteratur

19. Thomas Lyse Hansen
Six Essays on Pricing and Weather risk in Energy Markets

20. Sabine Madsen
Emerging Methods – An Interpretive Study of ISD Methods in Practice

21. Evis Sinani
The Impact of Foreign Direct Investment on Efficiency, Productivity Growth and Trade: An Empirical Investigation

22. Bent Meier Sørensen
Making Events Work Or, How to Multiply Your Crisis

23. Pernille Schnoor
Brand Ethos
Om troværdige brand- og virksomhedsidentiteter i et retorisk og diskursteoretisk perspektiv

24. Sidsel Fabech
Von welchem Österreich ist hier die Rede?
Diskursive forhandlinger og magtkampe mellem rivaliserende nationale identitetskonstruktioner i østrigske pressediskurser

25. Klavs Odgaard Christensen
Sprogpolitik og identitetsdannelse i flersprogede forbundsstater
Et komparativt studie af Schweiz og Canada

26. Dana B. Minbaeva
Human Resource Practices and Knowledge Transfer in Multinational Corporations

27. Holger Højlund
Markedets politiske fornuft
Et studie af velfærdens organisering i perioden 1990-2003

28. Christine Mølgaard Frandsen
A.s erfaring
Om mellemværendets praktik i en transformation af mennesket og subjektiviteten

29. Sine Nørholm Just
The Constitution of Meaning – A Meaningful Constitution?
Legitimacy, identity, and public opinion in the debate on the future of Europe

2005

1. Claus J. Varnes
Managing product innovation through rules – The role of formal and structured methods in product development

2. Helle Hedegaard Hein
Mellem konflikt og konsensus – Dialogudvikling på hospitalsklinikker

3. Axel Rosenø
Customer Value Driven Product Innovation – A Study of Market Learning in New Product Development

4. Søren Buhl Pedersen
Making space
An outline of place branding

5. Camilla Funck Ellehave
Differences that Matter
An analysis of practices of gender and organizing in contemporary workplaces

6. Rigmor Madeleine Lond
Styring af kommunale forvaltninger

7. Mette Aagaard Andreassen
Supply Chain versus Supply Chain Benchmarking as a Means to Managing Supply Chains

8. Caroline Aggestam-Pontoppidan
From an idea to a standard
The UN and the global governance of accountants' competence

9. Norsk ph.d.

10. Vivienne Heng Ker-ni
An Experimental Field Study on the

Effectiveness of Grocer Media Advertising
Measuring Ad Recall and Recognition, Purchase Intentions and Short-Term Sales

11. Allan Mortensen
Essays on the Pricing of Corporate Bonds and Credit Derivatives

12. Remo Stefano Chiari
Figure che fanno conoscere
Itinerario sull'idea del valore cognitivo e espressivo della metafora e di altri tropi da Aristotele e da Vico fino al cognitivismo contemporaneo

13. Anders Mcllquham-Schmidt
Strategic Planning and Corporate Performance
An integrative research review and a meta-analysis of the strategic planning and corporate performance literature from 1956 to 2003

14. Jens Geersbro
The TDF – PMI Case
Making Sense of the Dynamics of Business Relationships and Networks

15 Mette Andersen
Corporate Social Responsibility in Global Supply Chains
Understanding the uniqueness of firm behaviour

16. Eva Boxenbaum
Institutional Genesis: Micro – Dynamic Foundations of Institutional Change

17. Peter Lund-Thomsen
Capacity Development, Environmental Justice NGOs, and Governance: The Case of South Africa

18. Signe Jarlov
Konstruktioner af offentlig ledelse

19. Lars Stæhr Jensen
Vocabulary Knowledge and Listening Comprehension in English as a Foreign Language
An empirical study employing data elicited from Danish EFL learners

20. Christian Nielsen
Essays on Business Reporting
Production and consumption of strategic information in the market for information

21. Marianne Thejls Fischer
Egos and Ethics of Management Consultants

22. Annie Bekke Kjær
Performance management i Proces-innovation
– belyst i et social-konstruktivistisk perspektiv

23. Suzanne Dee Pedersen
GENTAGELSENS METAMORFOSE
Om organisering af den kreative gøren i den kunstneriske arbejdspraksis

24. Benedikte Dorte Rosenbrink
Revenue Management
Økonomiske, konkurrencemæssige & organisatoriske konsekvenser

25. Thomas Riise Johansen
Written Accounts and Verbal Accounts
The Danish Case of Accounting and Accountability to Employees

26. Ann Fogelgren-Pedersen
The Mobile Internet: Pioneering Users' Adoption Decisions

27. Birgitte Rasmussen
Ledelse i fællesskab – de tillidsvalgtes fornyende rolle

28. Gitte Thit Nielsen
Remerger
– skabende ledelseskræfter i fusion og opkøb

29. Carmine Gioia
A MICROECONOMETRIC ANALYSIS OF MERGERS AND ACQUISITIONS

30. Ole Hinz
Den effektive forandringsleder: pilot, pædagog eller politiker?
Et studie i arbejdslederes meningstilskrivninger i forbindelse med vellykket gennemførelse af ledelsesinitierede forandringsprojekter

31. Kjell-Åge Gotvassli
Et praksisbasert perspektiv på dynamiske læringsnettverk i toppidretten
Norsk ph.d., ej til salg gennem Samfundslitteratur

32. Henriette Langstrup Nielsen
Linking Healthcare
An inquiry into the changing performances of web-based technology for asthma monitoring

33. Karin Tweddell Levinsen
Virtuel Uddannelsespraksis
Master i IKT og Læring – et casestudie i hvordan proaktiv proceshåndtering kan forbedre praksis i virtuelle læringsmiljøer

34. Anika Liversage
Finding a Path
Labour Market Life Stories of Immigrant Professionals

35. Kasper Elmquist Jørgensen
Studier i samspillet mellem stat og erhvervsliv i Danmark under 1. verdenskrig

36. Finn Janning
A DIFFERENT STORY
Seduction, Conquest and Discovery

37. Patricia Ann Plackett
Strategic Management of the Radical Innovation Process
Leveraging Social Capital for Market Uncertainty Management

2006

1. Christian Vintergaard
Early Phases of Corporate Venturing

2. Niels Rom-Poulsen
Essays in Computational Finance

3. Tina Brandt Husman
Organisational Capabilities, Competitive Advantage & Project-Based Organisations
The Case of Advertising and Creative Good Production

4. Mette Rosenkrands Johansen
Practice at the top
– how top managers mobilise and use non-financial performance measures

5. Eva Parum
Corporate governance som strategisk kommunikations- og ledelsesværktøj

6. Susan Aagaard Petersen
Culture's Influence on Performance Management: The Case of a Danish Company in China

7. Thomas Nicolai Pedersen
The Discursive Constitution of Organizational Governance – Between unity and differentiation
The Case of the governance of environmental risks by World Bank environmental staff

8. Cynthia Selin
Volatile Visions: Transactons in Anticipatory Knowledge

9. Jesper Banghøj
Financial Accounting Information and Compensation in Danish Companies

10. Mikkel Lucas Overby
Strategic Alliances in Emerging High-Tech Markets: What's the Difference and does it Matter?

11. Tine Aage
External Information Acquisition of Industrial Districts and the Impact of Different Knowledge Creation Dimensions

A case study of the Fashion and Design Branch of the Industrial District of Montebelluna, NE Italy

12. Mikkel Flyverbom
Making the Global Information Society Governable
On the Governmentality of Multi-Stakeholder Networks

13. Anette Grønning
Personen bag
Tilstedeværelse i e-mail som interaktionsform mellem kunde og medarbejder i dansk forsikringskontekst

14. Jørn Helder
One Company – One Language?
The NN-case

15. Lars Bjerregaard Mikkelsen
Differing perceptions of customer value
Development and application of a tool for mapping perceptions of customer value at both ends of customer-supplier dyads in industrial markets

16. Lise Granerud
Exploring Learning
Technological learning within small manufacturers in South Africa

17. Esben Rahbek Pedersen
Between Hopes and Realities: Reflections on the Promises and Practices of Corporate Social Responsibility (CSR)

18. Ramona Samson
The Cultural Integration Model and European Transformation.
The Case of Romania

2007

1. Jakob Vestergaard
Discipline in The Global Economy
Panopticism and the Post-Washington Consensus

2. Heidi Lund Hansen
Spaces for learning and working
A qualitative study of change of work, management, vehicles of power and social practices in open offices

3. Sudhanshu Rai
Exploring the internal dynamics of software development teams during user analysis
A tension enabled Institutionalization Model; "Where process becomes the objective"

4. Norsk ph.d.
Ej til salg gennem Samfundslitteratur

5. Serden Ozcan
EXPLORING HETEROGENEITY IN ORGANIZATIONAL ACTIONS AND OUTCOMES
A Behavioural Perspective

6. Kim Sundtoft Hald
Inter-organizational Performance Measurement and Management in Action
– An Ethnography on the Construction of Management, Identity and Relationships

7. Tobias Lindeberg
Evaluative Technologies
Quality and the Multiplicity of Performance

8. Merete Wedell-Wedellsborg
Den globale soldat
Identitetsdannelse og identitetsledelse i multinationale militære organisationer

9. Lars Frederiksen
Open Innovation Business Models
Innovation in firm-hosted online user communities and inter-firm project ventures in the music industry
– A collection of essays

10. Jonas Gabrielsen
Retorisk toposlære – fra statisk 'sted' til persuasiv aktivitet

11. Christian Moldt-Jørgensen
Fra meningsløs til meningsfuld evaluering.
Anvendelsen af studentertilfredshedsmålinger på de korte og mellemlange videregående uddannelser set fra et psykodynamisk systemperspektiv

12. Ping Gao
Extending the application of actor-network theory
Cases of innovation in the telecommunications industry

13. Peter Mejlby
Frihed og fængsel, en del af den samme drøm?
Et phronetisk baseret casestudie af frigørelsens og kontrollens sameksistens i værdibaseret ledelse!

14. Kristina Birch
Statistical Modelling in Marketing

15. Signe Poulsen
Sense and sensibility:
The language of emotional appeals in insurance marketing

16. Anders Bjerre Trolle
Essays on derivatives pricing and dynamic asset allocation

17. Peter Feldhütter
Empirical Studies of Bond and Credit Markets

18. Jens Henrik Eggert Christensen
Default and Recovery Risk Modeling and Estimation

19. Maria Theresa Larsen
Academic Enterprise: A New Mission for Universities or a Contradiction in Terms?
Four papers on the long-term implications of increasing industry involvement and commercialization in academia

20. Morten Wellendorf
Postimplementering af teknologi i den offentlige forvaltning
Analyser af en organisations kontinuerlige arbejde med informationsteknologi

21. Ekaterina Mhaanna
Concept Relations for Terminological Process Analysis

22. Stefan Ring Thorbjørnsen
Forsvaret i forandring
Et studie i officerers kapabiliteter under påvirkning af omverdenens forandringspres mod øget styring og læring

23. Christa Breum Amhøj
Det selvskabte medlemskab om managementstaten, dens styringsteknologier og indbyggere

24. Karoline Bromose
Between Technological Turbulence and Operational Stability
– An empirical case study of corporate venturing in TDC

25. Susanne Justesen
Navigating the Paradoxes of Diversity in Innovation Practice
– A Longitudinal study of six very different innovation processes – in practice

26. Luise Noring Henler
Conceptualising successful supply chain partnerships
– Viewing supply chain partnerships from an organisational culture perspective

27. Mark Mau
Kampen om telefonen
Det danske telefonvæsen under den tyske besættelse 1940-45

28. Jakob Halskov
The semiautomatic expansion of existing terminological ontologies using knowledge patterns discovered

on the WWW – an implementation and evaluation

29. Gergana Koleva
European Policy Instruments Beyond Networks and Structure: The Innovative Medicines Initiative

30. Christian Geisler Asmussen
Global Strategy and International Diversity: A Double-Edged Sword?

31. Christina Holm-Petersen
Stolthed og fordom
Kultur- og identitetsarbejde ved skabelsen af en ny sengeafdeling gennem fusion

32. Hans Peter Olsen
Hybrid Governance of Standardized States
Causes and Contours of the Global Regulation of Government Auditing

33. Lars Bøge Sørensen
Risk Management in the Supply Chain

34. Peter Aagaard
Det unikkes dynamikker
De institutionelle mulighedsbetingelser bag den individuelle udforskning i professionelt og frivilligt arbejde

35. Yun Mi Antorini
Brand Community Innovation
An Intrinsic Case Study of the Adult Fans of LEGO Community

36. Joachim Lynggaard Boll
Labor Related Corporate Social Performance in Denmark
Organizational and Institutional Perspectives

2008

1. Frederik Christian Vinten
Essays on Private Equity

2. Jesper Clement
Visual Influence of Packaging Design on In-Store Buying Decisions

3. Marius Brostrøm Kousgaard
Tid til kvalitetsmåling?
– Studier af indrulleringsprocesser i forbindelse med introduktionen af kliniske kvalitetsdatabaser i speciallægepraksissektoren

4. Irene Skovgaard Smith
Management Consulting in Action
Value creation and ambiguity in client-consultant relations

5. Anders Rom
Management accounting and integrated information systems
How to exploit the potential for management accounting of information technology

6. Marina Candi
Aesthetic Design as an Element of Service Innovation in New Technology-based Firms

7. Morten Schnack
Teknologi og tværfaglighed
– en analyse af diskussionen omkring indførelse af EPJ på en hospitalsafdeling

8. Helene Balslev Clausen
Juntos pero no revueltos – un estudio sobre emigrantes norteamericanos en un pueblo mexicano

9. Lise Justesen
Kunsten at skrive revisionsrapporter. En beretning om forvaltningsrevisionens beretninger

10. Michael E. Hansen
The politics of corporate responsibility: CSR and the governance of child labor and core labor rights in the 1990s

11. Anne Roepstorff
Holdning for handling – en etnologisk undersøgelse af Virksomheders Sociale Ansvar/CSR

12. Claus Bajlum
Essays on Credit Risk and Credit Derivatives

13. Anders Bojesen
The Performative Power of Competence – an Inquiry into Subjectivity and Social Technologies at Work

14. Satu Reijonen
Green and Fragile
A Study on Markets and the Natural Environment

15. Ilduara Busta
Corporate Governance in Banking
A European Study

16. Kristian Anders Hvass
A Boolean Analysis Predicting Industry Change: Innovation, Imitation & Business Models
The Winning Hybrid: A case study of isomorphism in the airline industry

17. Trine Paludan
De uvidende og de udviklingsparate
Identitet som mulighed og restriktion blandt fabriksarbejdere på det aftaloriserede fabriksgulv

18. Kristian Jakobsen
Foreign market entry in transition economies: Entry timing and mode choice

19. Jakob Elming
Syntactic reordering in statistical machine translation

20. Lars Brømsøe Termansen
Regional Computable General Equilibrium Models for Denmark
Three papers laying the foundation for regional CGE models with agglomeration characteristics

21. Mia Reinholt
The Motivational Foundations of Knowledge Sharing

22. Frederikke Krogh-Meibom
The Co-Evolution of Institutions and Technology
– A Neo-Institutional Understanding of Change Processes within the Business Press – the Case Study of Financial Times

23. Peter D. Ørberg Jensen
OFFSHORING OF ADVANCED AND HIGH-VALUE TECHNICAL SERVICES: ANTECEDENTS, PROCESS DYNAMICS AND FIRMLEVEL IMPACTS

24. Pham Thi Song Hanh
Functional Upgrading, Relational Capability and Export Performance of Vietnamese Wood Furniture Producers

25. Mads Vangkilde
Why wait?
An Exploration of first-mover advantages among Danish e-grocers through a resource perspective

26. Hubert Buch-Hansen
Rethinking the History of European Level Merger Control
A Critical Political Economy Perspective

2009

1. Vivian Lindhardsen
From Independent Ratings to Communal Ratings: A Study of CWA Raters' Decision-Making Behaviours

2. Guðrið Weihe
Public-Private Partnerships: Meaning and Practice

3. Chris Nøkkentved
Enabling Supply Networks with Collaborative Information Infrastructures
An Empirical Investigation of Business Model Innovation in Supplier Relationship Management

4. Sara Louise Muhr
Wound, Interrupted – On the Vulnerability of Diversity Management

5. Christine Sestoft
Forbrugeradfærd i et Stats- og Livsformsteoretisk perspektiv

6. Michael Pedersen
Tune in, Breakdown, and Reboot: On the production of the stress-fit self-managing employee

7. Salla Lutz
Position and Reposition in Networks – Exemplified by the Transformation of the Danish Pine Furniture Manufacturers

8. Jens Forssbæck
Essays on market discipline in commercial and central banking

9. Tine Murphy
Sense from Silence – A Basis for Organised Action
How do Sensemaking Processes with Minimal Sharing Relate to the Reproduction of Organised Action?

10. Sara Malou Strandvad
Inspirations for a new sociology of art: A sociomaterial study of development processes in the Danish film industry

11. Nicolaas Mouton
On the evolution of social scientific metaphors:
A cognitive-historical enquiry into the divergent trajectories of the idea that collective entities – states and societies, cities and corporations – are biological organisms.

12. Lars Andreas Knutsen
Mobile Data Services:
Shaping of user engagements

13. Nikolaos Theodoros Korfiatis
Information Exchange and Behavior
A Multi-method Inquiry on Online Communities

14. Jens Albæk
Forestillinger om kvalitet og tværfaglighed på sygehuse
– skabelse af forestillinger i læge- og plejegrupperne angående relevans af nye idéer om kvalitetsudvikling gennem tolkningsprocesser

15. Maja Lotz
The Business of Co-Creation – and the Co-Creation of Business

16. Gitte P. Jakobsen
Narrative Construction of Leader Identity in a Leader Development Program Context

17. Dorte Hermansen
"Living the brand" som en brandorienteret dialogisk praxis:
Om udvikling af medarbejdernes brandorienterede dømmekraft

18. Aseem Kinra
Supply Chain (logistics) Environmental Complexity

19. Michael Nørager
How to manage SMEs through the transformation from non innovative to innovative?

20. Kristin Wallevik
Corporate Governance in Family Firms
The Norwegian Maritime Sector

21. Bo Hansen Hansen
Beyond the Process
Enriching Software Process Improvement with Knowledge Management

22. Annemette Skot-Hansen
Franske adjektivisk afledte adverbier, der tager præpositionssyntagmer indledt med præpositionen à som argumenter
En valensgrammatisk undersøgelse

23. Line Gry Knudsen
Collaborative R&D Capabilities
In Search of Micro-Foundations

24. Christian Scheuer
Employers meet employees
Essays on sorting and globalization

25. Rasmus Johnsen
The Great Health of Melancholy
A Study of the Pathologies of Performativity

26. Ha Thi Van Pham
Internationalization, Competitiveness Enhancement and Export Performance of Emerging Market Firms:
Evidence from Vietnam

27. Henriette Balieu
Kontrolbegrebets betydning for kausativalternationen i spansk
En kognitiv-typologisk analyse

2010

1. Yen Tran
Organizing Innovationin Turbulent Fashion Market
Four papers on how fashion firms create and appropriate innovation value

2. Anders Raastrup Kristensen
Metaphysical Labour
Flexibility, Performance and Commitment in Work-Life Management

3. Margrét Sigrún Sigurdardottir
Dependently independent
Co-existence of institutional logics in the recorded music industry

4. Ásta Dis Óladóttir
Internationalization from a small domestic base:
An empirical analysis of Economics and Management

5. Christine Secher
E-deltagelse i praksis – politikernes og forvaltningens medkonstruktion og konsekvenserne heraf

6. Marianne Stang Våland
What we talk about when we talk about space:
End User Participation between Processes of Organizational and Architectural Design

7. Rex Degnegaard
Strategic Change Management
Change Management Challenges in the Danish Police Reform

8. Ulrik Schultz Brix
Værdi i rekruttering – den sikre beslutning
En pragmatisk analyse af perception og synliggørelse af værdi i rekrutterings- og udvælgelsesarbejdet

9. Jan Ole Similä
Kontraktsledelse
Relasjonen mellom virksomhetsledelse og kontraktshåndtering, belyst via fire norske virksomheter

10. Susanne Boch Waldorff
Emerging Organizations: In between local translation, institutional logics and discourse

11. Brian Kane
Performance Talk
Next Generation Management of Organizational Performance

12. Lars Ohnemus
Brand Thrust: Strategic Branding and Shareholder Value
An Empirical Reconciliation of two Critical Concepts

13. Jesper Schlamovitz
Håndtering af usikkerhed i film- og byggeprojekter

14. Tommy Moesby-Jensen
Det faktiske livs forbindtlighed
Førsokratisk informeret, ny-aristotelisk ἦθος-tænkning hos Martin Heidegger

15. Christian Fich
Two Nations Divided by Common Values
French National Habitus and the Rejection of American Power

16. Peter Beyer
Processer, sammenhængskraft og fleksibilitet
Et empirisk casestudie af omstillingsforløb i fire virksomheder

17. Adam Buchhorn
Markets of Good Intentions
Constructing and Organizing Biogas Markets Amid Fragility and Controversy

18. Cecilie K. Moesby-Jensen
Social læring og fælles praksis
Et mixed method studie, der belyser læringskonsekvenser af et lederkursus for et praksisfællesskab af offentlige mellemledere

19. Heidi Boye
Fødevarer og sundhed i senmodernismen
– En indsigt i hyggefænomenet og de relaterede fødevarepraksisser

20. Kristine Munkgård Pedersen
Flygtige forbindelser og midlertidige mobiliseringer
Om kulturel produktion på Roskilde Festival

21. Oliver Jacob Weber
Causes of Intercompany Harmony in Business Markets – An Empirical Investigation from a Dyad Perspective

22. Susanne Ekman
Authority and Autonomy
Paradoxes of Modern Knowledge Work

23. Anette Frey Larsen
Kvalitetsledelse på danske hospitaler
– Ledelsernes indflydelse på introduktion og vedligeholdelse af kvalitetsstrategier i det danske sundhedsvæsen

24. Toyoko Sato
Performativity and Discourse: Japanese Advertisements on the Aesthetic Education of Desire

25. Kenneth Brinch Jensen
Identifying the Last Planner System
Lean management in the construction industry

26. Javier Busquets
Orchestrating Network Behavior for Innovation

27. Luke Patey
The Power of Resistance: India's National Oil Company and International Activism in Sudan

28. Mette Vedel
Value Creation in Triadic Business Relationships. Interaction, Interconnection and Position

29. Kristian Tørning
Knowledge Management Systems in Practice – A Work Place Study

30. Qingxin Shi
An Empirical Study of Thinking Aloud Usability Testing from a Cultural Perspective

31. Tanja Juul Christiansen
Corporate blogging: Medarbejderes kommunikative handlekraft

32. Malgorzata Ciesielska
Hybrid Organisations.
A study of the Open Source – business setting

33. Jens Dick-Nielsen
Three Essays on Corporate Bond Market Liquidity

34. Sabrina Speiermann
Modstandens Politik
Kampagnestyring i Velfærdsstaten.
En diskussion af trafikkampagners styringspotentiale

35. Julie Uldam
Fickle Commitment. Fostering political engagement in 'the flighty world of online activism'

36. Annegrete Juul Nielsen
Traveling technologies and transformations in health care

37. Athur Mühlen-Schulte
Organising Development
Power and Organisational Reform in the United Nations Development Programme

38. Louise Rygaard Jonas
Branding på butiksgulvet
Et case-studie af kultur- og identitetsarbejdet i Kvickly

2011

1. Stefan Fraenkel
Key Success Factors for Sales Force Readiness during New Product Launch
A Study of Product Launches in the Swedish Pharmaceutical Industry

2. Christian Plesner Rossing
International Transfer Pricing in Theory and Practice

3. Tobias Dam Hede
Samtalekunst og ledelsesdisciplin
– en analyse af coachingsdiskursens genealogi og governmentality

4. Kim Pettersson
Essays on Audit Quality, Auditor Choice, and Equity Valuation

5. Henrik Merkelsen
The expert-lay controversy in risk research and management. Effects of institutional distances. Studies of risk definitions, perceptions, management and communication

6. Simon S. Torp
Employee Stock Ownership:
Effect on Strategic Management and Performance

7. Mie Harder
Internal Antecedents of Management Innovation

8. Ole Helby Petersen
Public-Private Partnerships: Policy and Regulation – With Comparative and Multi-level Case Studies from Denmark and Ireland

9. Morten Krogh Petersen
'Good' Outcomes. Handling Multiplicity in Government Communication

10. Kristian Tangsgaard Hvelplund
Allocation of cognitive resources in translation - an eye-tracking and key-logging study

11. Moshe Yonatany
The Internationalization Process of Digital Service Providers

12. Anne Vestergaard
Distance and Suffering
Humanitarian Discourse in the age of Mediatization

13. Thorsten Mikkelsen
Personligsheds indflydelse på forretningsrelationer

14. Jane Thostrup Jagd
Hvorfor fortsætter fusionsbølgen udover "the tipping point"?
– en empirisk analyse af information og kognitioner om fusioner

15. Gregory Gimpel
Value-driven Adoption and Consumption of Technology: Understanding Technology Decision Making

16. Thomas Stengade Sønderskov
Den nye mulighed
Social innovation i en forretningsmæssig kontekst

17. Jeppe Christoffersen
Donor supported strategic alliances in developing countries

18. Vibeke Vad Baunsgaard
Dominant Ideological Modes of Rationality: Cross functional

integration in the process of product innovation

19. Throstur Olaf Sigurjonsson
Governance Failure and Icelands's Financial Collapse

20. Allan Sall Tang Andersen
Essays on the modeling of risks in interest-rate and inflation markets

21. Heidi Tscherning
Mobile Devices in Social Contexts

22. Birgitte Gorm Hansen
Adapting in the Knowledge Economy Lateral Strategies for Scientists and Those Who Study Them

23. Kristina Vaarst Andersen
Optimal Levels of Embeddedness The Contingent Value of Networked Collaboration

24. Justine Grønbæk Pors
Noisy Management A History of Danish School Governing from 1970-2010

25. Stefan Linder
Micro-foundations of Strategic Entrepreneurship Essays on Autonomous Strategic Action

26. Xin Li
Toward an Integrative Framework of National Competitiveness An application to China

27. Rune Thorbjørn Clausen
Værdifuld arkitektur Et eksplorativt studie af bygningers rolle i virksomheders værdiskabelse

28. Monica Viken
Markedsundersøkelser som bevis i varemerke- og markedsføringsrett

29. Christian Wymann
Tattooing The Economic and Artistic Constitution of a Social Phenomenon

30. Sanne Frandsen
Productive Incoherence A Case Study of Branding and Identity Struggles in a Low-Prestige Organization

31. Mads Stenbo Nielsen
Essays on Correlation Modelling

32. Ivan Häuser
Følelse og sprog Etablering af en ekspressiv kategori, eksemplificeret på russisk

33. Sebastian Schwenen
Security of Supply in Electricity Markets

2012

1. Peter Holm Andreasen
The Dynamics of Procurement Management - A Complexity Approach

2. Martin Haulrich
Data-Driven Bitext Dependency Parsing and Alignment

3. Line Kirkegaard
Konsulenten i den anden nat En undersøgelse af det intense arbejdsliv

4. Tonny Stenheim
Decision usefulness of goodwill under IFRS

5. Morten Lind Larsen
Produktivitet, vækst og velfærd Industrirådet og efterkrigstidens Danmark 1945 - 1958

6. Petter Berg
Cartel Damages and Cost Asymmetries

7. Lynn Kahle
Experiential Discourse in Marketing A methodical inquiry into practice and theory

8. Anne Roelsgaard Obling
Management of Emotions in Accelerated Medical Relationships

9. Thomas Frandsen
Managing Modularity of Service Processes Architecture

10. Carina Christine Skovmøller
CSR som noget særligt
Et casestudie om styring og menings-skabelse i relation til CSR ud fra en intern optik

11. Michael Tell
Fradragsbeskæring af selskabers finansieringsudgifter
En skatteretlig analyse af SEL §§ 11, 11B og 11C

12. Morten Holm
Customer Profitability Measurement Models
Their Merits and Sophistication across Contexts

13. Katja Joo Dyppel
Beskatning af derivater
En analyse af dansk skatteret

14. Esben Anton Schultz
Essays in Labor Economics
Evidence from Danish Micro Data

15. Carina Risvig Hansen
"Contracts not covered, or not fully covered, by the Public Sector Directive"

16. Anja Svejgaard Pors
Iværksættelse af kommunikation
- patientfigurer i hospitalets strategiske kommunikation

17. Frans Bévort
Making sense of management with logics
An ethnographic study of accountants who become managers

18. René Kallestrup
The Dynamics of Bank and Sovereign Credit Risk

19. Brett Crawford
Revisiting the Phenomenon of Interests in Organizational Institutionalism
The Case of U.S. Chambers of Commerce

20. Mario Daniele Amore
Essays on Empirical Corporate Finance

21. Arne Stjernholm Madsen
The evolution of innovation strategy
Studied in the context of medical device activities at the pharmaceutical company Novo Nordisk A/S in the period 1980-2008

22. Jacob Holm Hansen
Is Social Integration Necessary for Corporate Branding?
A study of corporate branding strategies at Novo Nordisk

23. Stuart Webber
Corporate Profit Shifting and the Multinational Enterprise

24. Helene Ratner
Promises of Reflexivity
Managing and Researching Inclusive Schools

25. Therese Strand
The Owners and the Power: Insights from Annual General Meetings

26. Robert Gavin Strand
In Praise of Corporate Social Responsibility Bureaucracy

27. Nina Sormunen
Auditor's going-concern reporting
Reporting decision and content of the report

28. John Bang Mathiasen
Learning within a product development working practice:
- an understanding anchored in pragmatism

29. Philip Holst Riis
Understanding Role-Oriented Enterprise Systems: From Vendors to Customers

30. Marie Lisa Dacanay
Social Enterprises and the Poor
Enhancing Social Entrepreneurship and Stakeholder Theory

31. Fumiko Kano Glückstad
Bridging Remote Cultures: Cross-lingual concept mapping based on the information receiver's prior-knowledge

32. Henrik Barslund Fosse
Empirical Essays in International Trade

33. Peter Alexander Albrecht
Foundational hybridity and its reproduction
Security sector reform in Sierra Leone

34. Maja Rosenstock
CSR - hvor svært kan det være? Kulturanalytisk casestudie om udfordringer og dilemmaer med at forankre Coops CSR-strategi

35. Jeanette Rasmussen
Tweens, medier og forbrug
Et studie af 10-12 årige danske børns brug af internettet, opfattelse og forståelse af markedsføring og forbrug

36. Ib Tunby Gulbrandsen
'This page is not intended for a US Audience'
A five-act spectacle on online communication, collaboration & organization.

37. Kasper Aalling Teilmann
Interactive Approaches to Rural Development

38. Mette Mogensen
The Organization(s) of Well-being and Productivity
(Re)assembling work in the Danish Post

39. Søren Friis Møller
From Disinterestedness to Engagement
Towards Relational Leadership In the Cultural Sector

40. Nico Peter Berhausen
Management Control, Innovation and Strategic Objectives – Interactions and Convergence in Product Development Networks

41. Balder Onarheim
Creativity under Constraints
Creativity as Balancing 'Constrainedness'

42. Haoyong Zhou
Essays on Family Firms

43. Elisabeth Naima Mikkelsen
Making sense of organisational conflict
An empirical study of enacted sensemaking in everyday conflict at work

2013

1. Jacob Lyngsie
Entrepreneurship in an Organizational Context

2. Signe Groth-Brodersen
Fra ledelse til selvet
En socialpsykologisk analyse af forholdet imellem selvledelse, ledelse og stress i det moderne arbejdsliv

3. Nis Høyrup Christensen
Shaping Markets: A Neoinstitutional Analysis of the Emerging Organizational Field of Renewable Energy in China

4. Christian Edelvold Berg
As a matter of size
THE IMPORTANCE OF CRITICAL MASS AND THE CONSEQUENCES OF SCARCITY FOR TELEVISION MARKETS

5. Christine D. Isakson
Coworker Influence and Labor Mobility
Essays on Turnover, Entrepreneurship and Location Choice in the Danish Maritime Industry

6. Niels Joseph Jerne Lennon
Accounting Qualities in Practice
Rhizomatic stories of representational faithfulness, decision making and control

7. Shannon O'Donnell
Making Ensemble Possible
How special groups organize for collaborative creativity in conditions of spatial variability and distance

8. Robert W. D. Veitch
Access Decisions in a Partly-Digital World
Comparing Digital Piracy and Legal Modes for Film and Music

9. Marie Mathiesen
Making Strategy Work
An Organizational Ethnography

10. Arisa Shollo
The role of business intelligence in organizational decision-making

11. Mia Kaspersen
The construction of social and environmental reporting

12. Marcus Møller Larsen
The organizational design of offshoring

13. Mette Ohm Rørdam
EU Law on Food Naming
The prohibition against misleading names in an internal market context

14. Hans Peter Rasmussen
GIV EN GED!
Kan giver-idealtyper forklare støtte til velgørenhed og understøtte relationsopbygning?

15. Ruben Schachtenhaufen
Fonetisk reduktion i dansk

16. Peter Koerver Schmidt
Dansk CFC-beskatning
I et internationalt og komparativt perspektiv

17. Morten Froholdt
Strategi i den offentlige sektor
En kortlægning af styringsmæssig kontekst, strategisk tilgang, samt anvendte redskaber og teknologier for udvalgte danske statslige styrelser

18. Annette Camilla Sjørup
Cognitive effort in metaphor translation
An eye-tracking and key-logging study

19. Tamara Stucchi
The Internationalization of Emerging Market Firms:
A Context-Specific Study

20. Thomas Lopdrup-Hjorth
"Let's Go Outside":
The Value of Co-Creation

21. Ana Alačovska
Genre and Autonomy in Cultural Production
The case of travel guidebook production

22. Marius Gudmand-Høyer
Stemningssindssygdommenes historie i det 19. århundrede
Omtydningen af melankolien og manien som bipolære stemningslidelser i dansk sammenhæng under hensyn til dannelsen af det moderne følelseslivs relative autonomi.
En problematiserings- og erfarings-analytisk undersøgelse

23. Lichen Alex Yu
Fabricating an S&OP Process
Circulating References and Matters of Concern

24. Esben Alfort
The Expression of a Need
Understanding search

25. Trine Pallesen
Assembling Markets for Wind Power
An Inquiry into the Making of Market Devices

26. Anders Koed Madsen
Web-Visions
Repurposing digital traces to organize social attention

27. Lærke Højgaard Christiansen
BREWING ORGANIZATIONAL RESPONSES TO INSTITUTIONAL LOGICS

28. Tommy Kjær Lassen
EGENTLIG SELVLEDELSE
En ledelsesfilosofisk afhandling om selvledelsens paradoksale dynamik og eksistentielle engagement

29. Morten Rossing
Local Adaption and Meaning Creation in Performance Appraisal

30. Søren Obed Madsen
Lederen som oversætter
Et oversættelsesteoretisk perspektiv på strategisk arbejde

31. Thomas Høgenhaven
Open Government Communities
Does Design Affect Participation?

32. Kirstine Zinck Pedersen
Failsafe Organizing?
A Pragmatic Stance on Patient Safety

33. Anne Petersen
Hverdagslogikker i psykiatrisk arbejde
En institutionsetnografisk undersøgelse af hverdagen i psykiatriske organisationer

34. Didde Maria Humle
Fortællinger om arbejde

35. Mark Holst-Mikkelsen
Strategieksekvering i praksis
– barrierer og muligheder!

36. Malek Maalouf
Sustaining lean
Strategies for dealing with organizational paradoxes

37. Nicolaj Tofte Brenneche
Systemic Innovation In The Making
The Social Productivity of Cartographic Crisis and Transitions in the Case of SEEIT

38. Morten Gylling
The Structure of Discourse
A Corpus-Based Cross-Linguistic Study

39. Binzhang YANG
Urban Green Spaces for Quality Life
- Case Study: the landscape architecture for people in Copenhagen

40. Michael Friis Pedersen
Finance and Organization:
The Implications for Whole Farm Risk Management

41. Even Fallan
Issues on supply and demand for environmental accounting information

42. Ather Nawaz
Website user experience
A cross-cultural study of the relation between users´ cognitive style, context of use, and information architecture of local websites

43. Karin Beukel
The Determinants for Creating Valuable Inventions

44. Arjan Markus
External Knowledge Sourcing and Firm Innovation
Essays on the Micro-Foundations of Firms' Search for Innovation

2014

1. Solon Moreira
Four Essays on Technology Licensing and Firm Innovation

2. Karin Strzeletz Ivertsen
Partnership Drift in Innovation Processes
A study of the Think City electric car development

3. Kathrine Hoffmann Pii
Responsibility Flows in Patient-centred Prevention

4. Jane Bjørn Vedel
Managing Strategic Research
An empirical analysis of science-industry collaboration in a pharmaceutical company

5. Martin Gylling
Processuel strategi i organisationer
Monografi om dobbeltheden i tænkning af strategi, dels som vidensfelt i organisationsteori, dels som kunstnerisk tilgang til at skabe i erhvervsmæssig innovation

6. Linne Marie Lauesen
Corporate Social Responsibility in the Water Sector: How Material Practices and their Symbolic and Physical Meanings Form a Colonising Logic

7. Maggie Qiuzhu Mei
LEARNING TO INNOVATE: The role of ambidexterity, standard, and decision process

8. Inger Høedt-Rasmussen
Developing Identity for Lawyers Towards Sustainable Lawyering

9. Sebastian Fux
Essays on Return Predictability and Term Structure Modelling

10. Thorbjørn N. M. Lund-Poulsen
Essays on Value Based Management

11. Oana Brindusa Albu
Transparency in Organizing: A Performative Approach

12. Lena Olaison
Entrepreneurship at the limits

13. Hanne Sørum
DRESSED FOR WEB SUCCESS? An Empirical Study of Website Quality in the Public Sector

14. Lasse Folke Henriksen
Knowing networks How experts shape transnational governance

15. Maria Halbinger
Entrepreneurial Individuals Empirical Investigations into Entrepreneurial Activities of Hackers and Makers

16. Robert Spliid
Kapitalfondenes metoder og kompetencer

17. Christiane Stelling
Public-private partnerships & the need, development and management of trusting A processual and embedded exploration

18. Marta Gasparin
Management of design as a translation process

19. Kåre Moberg
Assessing the Impact of Entrepreneurship Education From ABC to PhD

20. Alexander Cole
Distant neighbors Collective learning beyond the cluster

21. Martin Møller Boje Rasmussen
Is Competitiveness a Question of Being Alike? How the United Kingdom, Germany and Denmark Came to Compete through their Knowledge Regimes from 1993 to 2007

22. Anders Ravn Sørensen
Studies in central bank legitimacy, currency and national identity Four cases from Danish monetary history

23. Nina Bellak
Can Language be Managed in International Business? Insights into Language Choice from a Case Study of Danish and Austrian Multinational Corporations (MNCs)

24. Rikke Kristine Nielsen
Global Mindset as Managerial Meta-competence and Organizational Capability: Boundary-crossing Leadership Cooperation in the MNC The Case of 'Group Mindset' in Solar A/S.

25. Rasmus Koss Hartmann
User Innovation inside government Towards a critically performative foundation for inquiry

26. Kristian Gylling Olesen
Flertydig og emergerende ledelse i folkeskolen
Et aktør-netværksteoretisk ledelses-studie af politiske evalueringsreformers betydning for ledelse i den danske folkeskole

27. Troels Riis Larsen
Kampen om Danmarks omdømme 1945-2010
Omdømmearbejde og omdømmepolitik

28. Klaus Majgaard
Jagten på autenticitet i offentlig styring

29. Ming Hua Li
Institutional Transition and Organizational Diversity: Differentiated internationalization strategies of emerging market state-owned enterprises

30. Sofie Blinkenberg Federspiel
IT, organisation og digitalisering: Institutionelt arbejde i den kommunale digitaliseringsproces

31. Elvi Weinreich
Hvilke offentlige ledere er der brug for når velfærdstænkningen flytter sig – er Diplomuddannelsens lederprofil svaret?

32. Ellen Mølgaard Korsager
Self-conception and image of context in the growth of the firm – A Penrosian History of Fiberline Composites

33. Else Skjold
The Daily Selection

34. Marie Louise Conradsen
The Cancer Centre That Never Was The Organisation of Danish Cancer Research 1949-1992

35. Virgilio Failla
Three Essays on the Dynamics of Entrepreneurs in the Labor Market

36. Nicky Nedergaard
Brand-Based Innovation
Relational Perspectives on Brand Logics and Design Innovation Strategies and Implementation

37. Mads Gjedsted Nielsen
Essays in Real Estate Finance

38. Kristin Martina Brandl
Process Perspectives on Service Offshoring

39. Mia Rosa Koss Hartmann
In the gray zone
With police in making space for creativity

40. Karen Ingerslev
Healthcare Innovation under The Microscope
Framing Boundaries of Wicked Problems

41. Tim Neerup Themsen
Risk Management in large Danish public capital investment programmes

2015

1. Jakob Ion Wille
Film som design
Design af levende billeder i film og tv-serier

2. Christiane Mossin
Interzones of Law and Metaphysics
Hierarchies, Logics and Foundations of Social Order seen through the Prism of EU Social Rights

3. Thomas Tøth
TRUSTWORTHINESS: ENABLING GLOBAL COLLABORATION
An Ethnographic Study of Trust, Distance, Control, Culture and Boundary Spanning within Offshore Outsourcing of IT Services

4. Steven Højlund
Evaluation Use in Evaluation Systems – The Case of the European Commission

5. Julia Kirch Kirkegaard
AMBIGUOUS WINDS OF CHANGE – OR FIGHTING AGAINST WINDMILLS IN CHINESE WIND POWER
A CONSTRUCTIVIST INQUIRY INTO CHINA'S PRAGMATICS OF GREEN MARKETISATION MAPPING CONTROVERSIES OVER A POTENTIAL TURN TO QUALITY IN CHINESE WIND POWER

6. Michelle Carol Antero
A Multi-case Analysis of the Development of Enterprise Resource Planning Systems (ERP) Business Practices

Morten Friis-Olivarius
The Associative Nature of Creativity

7. Mathew Abraham
New Cooperativism:
A study of emerging producer organisations in India

8. Stine Hedegaard
Sustainability-Focused Identity: Identity work performed to manage, negotiate and resolve barriers and tensions that arise in the process of constructing or ganizational identity in a sustainability context

9. Cecilie Glerup
Organizing Science in Society – the conduct and justification of resposible research

10. Allan Salling Pedersen
Implementering af ITIL® IT-governance - når best practice konflikter med kulturen Løsning af implementerings-problemer gennem anvendelse af kendte CSF i et aktionsforskningsforløb.

11. Nihat Misir
A Real Options Approach to Determining Power Prices

12. Mamdouh Medhat
MEASURING AND PRICING THE RISK OF CORPORATE FAILURES

13. Rina Hansen
Toward a Digital Strategy for Omnichannel Retailing

14. Eva Pallesen
In the rhythm of welfare creation
A relational processual investigation moving beyond the conceptual horizon of welfare management

15. Gouya Harirchi
In Search of Opportunities: Three Essays on Global Linkages for Innovation

16. Lotte Holck
Embedded Diversity: A critical ethnographic study of the structural tensions of organizing diversity

17. Jose Daniel Balarezo
Learning through Scenario Planning

18. Louise Pram Nielsen
Knowledge dissemination based on terminological ontologies. Using eye tracking to further user interface design.

19. Sofie Dam
PUBLIC-PRIVATE PARTNERSHIPS FOR INNOVATION AND SUSTAINABILITY TRANSFORMATION
An embedded, comparative case study of municipal waste management in England and Denmark

20. Ulrik Hartmyer Christiansen
Follwoing the Content of Reported Risk Across the Organization

21. Guro Refsum Sanden
Language strategies in multinational corporations. A cross-sector study of financial service companies and manufacturing companies.

22. Linn Gevoll
Designing performance management for operational level
- A closer look on the role of design choices in framing coordination and motivation

23. Frederik Larsen
Objects and Social Actions – on Second-hand Valuation Practices

24. Thorhildur Hansdottir Jetzek
The Sustainable Value of Open Government Data Uncovering the Generative Mechanisms of Open Data through a Mixed Methods Approach

25. Gustav Toppenberg
Innovation-based M&A – Technological-Integration Challenges – The Case of Digital-Technology Companies

26. Mie Plotnikof
Challenges of Collaborative Governance An Organizational Discourse Study of Public Managers' Struggles with Collaboration across the Daycare Area

27. Christian Garmann Johnsen
Who Are the Post-Bureaucrats? A Philosophical Examination of the Creative Manager, the Authentic Leader and the Entrepreneur

28. Jacob Brogaard-Kay
Constituting Performance Management A field study of a pharmaceutical company

29. Rasmus Ploug Jenle
Engineering Markets for Control: Integrating Wind Power into the Danish Electricity System

30. Morten Lindholst
Complex Business Negotiation: Understanding Preparation and Planning

31. Morten Grynings
TRUST AND TRANSPARENCY FROM AN ALIGNMENT PERSPECTIVE

32. Peter Andreas Norn
Byregimer og styringsevne: Politisk lederskab af store byudviklingsprojekter

33. Milan Miric
Essays on Competition, Innovation and Firm Strategy in Digital Markets

34. Sanne K. Hjordrup
The Value of Talent Management Rethinking practice, problems and possibilities

35. Johanna Sax
Strategic Risk Management – Analyzing Antecedents and Contingencies for Value Creation

36. Pernille Rydén
Strategic Cognition of Social Media

37. Mimmi Sjöklint
The Measurable Me - The Influence of Self-tracking on the User Experience

38. Juan Ignacio Staricco
Towards a Fair Global Economic Regime? A critical assessment of Fair Trade through the examination of the Argentinean wine industry

39. Marie Henriette Madsen
Emerging and temporary connections in Quality work

40. Yangfeng CAO
Toward a Process Framework of Business Model Innovation in the Global Context Entrepreneurship-Enabled Dynamic Capability of Medium-Sized Multinational Enterprises

41. Carsten Scheibye
Enactment of the Organizational Cost Structure in Value Chain Configuration A Contribution to Strategic Cost Management

2016

1. Signe Sofie Dyrby
Enterprise Social Media at Work

2. Dorte Boesby Dahl
The making of the public parking attendant
Dirt, aesthetics and inclusion in public service work

3. Verena Girschik
Realizing Corporate Responsibility Positioning and Framing in Nascent Institutional Change

4. Anders Ørding Olsen
IN SEARCH OF SOLUTIONS
Inertia, Knowledge Sources and Diversity in Collaborative Problem-solving

5. Pernille Steen Pedersen
Udkast til et nyt copingbegreb
En kvalifikation af ledelsesmuligheder for at forebygge sygefravær ved psykiske problemer.

6. Kerli Kant Hvass
Weaving a Path from Waste to Value: Exploring fashion industry business models and the circular economy

7. Kasper Lindskow
Exploring Digital News Publishing Business Models – a production network approach

8. Mikkel Mouritz Marfelt
The chameleon workforce: Assembling and negotiating the content of a workforce

9. Marianne Bertelsen
Aesthetic encounters
Rethinking autonomy, space & time in today's world of art

10. Louise Hauberg Wilhelmsen
EU PERSPECTIVES ON INTERNATIONAL COMMERCIAL ARBITRATION

11. Abid Hussain
On the Design, Development and Use of the Social Data Analytics Tool (SODATO): Design Propositions, Patterns, and Principles for Big Social Data Analytics

12. Mark Bruun
Essays on Earnings Predictability

13. Tor Bøe-Lillegraven
BUSINESS PARADOXES, BLACK BOXES, AND BIG DATA: BEYOND ORGANIZATIONAL AMBIDEXTERITY

14. Hadis Khonsary-Atighi
ECONOMIC DETERMINANTS OF DOMESTIC INVESTMENT IN AN OIL-BASED ECONOMY: THE CASE OF IRAN (1965-2010)

15. Maj Lervad Grasten
Rule of Law or Rule by Lawyers?
On the Politics of Translation in Global Governance

16. Lene Granzau Juel-Jacobsen
SUPERMARKEDETS MODUS OPERANDI – en hverdagssociologisk undersøgelse af forholdet mellem rum og handlen og understøtte relationsopbygning?

17. Christine Thalsgård Henriques
In search of entrepreneurial learning – Towards a relational perspective on incubating practices?

18. Patrick Bennett
Essays in Education, Crime, and Job Displacement

19. Søren Korsgaard
Payments and Central Bank Policy

20. Marie Kruse Skibsted
Empirical Essays in Economics of Education and Labor

21. Elizabeth Benedict Christensen
The Constantly Contingent Sense of Belonging of the 1.5 Generation Undocumented Youth
An Everyday Perspective

22. Lasse J. Jessen
Essays on Discounting Behavior and Gambling Behavior

23. Kalle Johannes Rose
Når stifterviljen dør…
Et retsøkonomisk bidrag til 200 års juridisk konflikt om ejendomsretten

24. Andreas Søeborg Kirkedal
Danish Stød and Automatic Speech Recognition

25. Ida Lunde Jørgensen
Institutions and Legitimations in Finance for the Arts

26. Olga Rykov Ibsen
An empirical cross-linguistic study of directives: A semiotic approach to the sentence forms chosen by British, Danish and Russian speakers in native and ELF contexts

27. Desi Volker
Understanding Interest Rate Volatility

28. Angeli Elizabeth Weller
Practice at the Boundaries of Business Ethics & Corporate Social Responsibility

29. Ida Danneskiold-Samsøe
Levende læring i kunstneriske organisationer
En undersøgelse af læringsprocesser mellem projekt og organisation på Aarhus Teater

30. Leif Christensen
Quality of information – The role of internal controls and materiality

31. Olga Zarzecka
Tie Content in Professional Networks

32. Henrik Mahncke
De store gaver
- Filantropiens gensidighedsrelationer i teori og praksis

33. Carsten Lund Pedersen
Using the Collective Wisdom of Frontline Employees in Strategic Issue Management

34. Yun Liu
Essays on Market Design

35. Denitsa Hazarbassanova Blagoeva
The Internationalisation of Service Firms

36. Manya Jaura Lind
Capability development in an off-shoring context: How, why and by whom

37. Luis R. Boscán F.
Essays on the Design of Contracts and Markets for Power System Flexibility

38. Andreas Philipp Distel
Capabilities for Strategic Adaptation: Micro-Foundations, Organizational Conditions, and Performance Implications

39. Lavinia Bleoca
The Usefulness of Innovation and Intellectual Capital in Business Performance: The Financial Effects of Knowledge Management vs. Disclosure

TITLER I ATV PH.D.-SERIEN

1992

1. Niels Kornum
Servicesamkørsel – organisation, økonomi og planlægningsmetode

1995

2. Verner Worm
Nordiske virksomheder i Kina
Kulturspecifikke interaktionsrelationer ved nordiske virksomhedsetableringer i Kina

1999

3. Mogens Bjerre
Key Account Management of Complex Strategic Relationships
An Empirical Study of the Fast Moving Consumer Goods Industry

2000

4. Lotte Darsø
Innovation in the Making
Interaction Research with heterogeneous Groups of Knowledge Workers creating new Knowledge and new Leads

2001

5. Peter Hobolt Jensen
Managing Strategic Design Identities
The case of the Lego Developer Network

2002

6. Peter Lohmann
The Deleuzian Other of Organizational Change – Moving Perspectives of the Human

7. Anne Marie Jess Hansen
To lead from a distance: The dynamic interplay between strategy and strategizing – A case study of the strategic management process

2003

8. Lotte Henriksen
Videndeling
– om organisatoriske og ledelsesmæssige udfordringer ved videndeling i praksis

9. Niels Christian Nickelsen
Arrangements of Knowing: Coordinating Procedures Tools and Bodies in Industrial Production – a case study of the collective making of new products

2005

10. Carsten Ørts Hansen
Konstruktion af ledelsesteknologier og effektivitet

TITLER I DBA PH.D.-SERIEN

2007

1. Peter Kastrup-Misir
Endeavoring to Understand Market Orientation – and the concomitant co-mutation of the researched, the re searcher, the research itself and the truth

2009

1. Torkild Leo Thellefsen
Fundamental Signs and Significance effects
A Semeiotic outline of Fundamental Signs, Significance-effects, Knowledge Profiling and their use in Knowledge Organization and Branding

2. Daniel Ronzani
When Bits Learn to Walk Don't Make Them Trip. Technological Innovation and the Role of Regulation by Law in Information Systems Research: the Case of Radio Frequency Identification (RFID)

2010

1. Alexander Carnera
Magten over livet og livet som magt
Studier i den biopolitiske ambivalens