



Turun yliopisto
University of Turku



ENABLING USE OF CYBERNETIC CONTROL SYSTEMS IN A KNOWLEDGE- INTENSIVE ORGANIZATION

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ABSTRACT

The main purpose of this doctoral thesis is to enhance our understanding, through an in-depth case study, on how to reach enabling formalization with the help of which control systems and related processes could concurrently facilitate efficiency and innovation. In the current knowledge economy, how to better manage such tensions is a key issue in many organizations. To solve this ambidextrous dilemma of formalization, Adler and Borys (1996) introduced the theoretical notion of enabling bureaucracy with four specific characteristics, namely internal transparency, global transparency, repair, and flexibility.

Despite the existence of the four enabling features in the case organization's cybernetic control systems (see Malmi & Brown 2008, 291; Green & Welsh 1988, 289), counterevidence regarding the postulated associations between the four specific characteristics of Adler & Borys (1996) and innovation, and especially its critical component of motivation was obtained. Notions from the psychological self-determination theory (e.g. Deci & Ryan 1985) were thereby brought into the analysis. The theory contends that for autonomous forms of motivation to arise, individual's three basic needs – competence, autonomy, and relatedness – must be fulfilled (Deci & Ryan 1985).

By using abduction in interpreting the acquired case study evidence, I came to appreciate many of the findings of Adler and Borys (1996) as well as Adler and Chen (2011) as the four enabling features supported innovation and autonomous motivation in several ways. While the findings support their view about the encouragement of motivation through internalization of both goals and of the discipline necessary to reach them, they concurrently indicate that the four features may not always be sufficient to support such processes. The basic psychological need of relatedness is in prior literature argued to be highly important for such processes of internalization and, to support it, cybernetic control system systems with relative evaluation processes and pressures can play an important part. I suggest that in the knowledge-intensive case organization, the failure in the internalization of values was associated with relatedness – due to an absence of right kind of pressure through the cybernetic control systems. The organizational members were in a relatively passive way engaged in using prior knowledge rather than enthusiastically creating new knowledge, although the latter was realised to be critical for the company's future success. It is thereby argued that for managers to adequately support their subordinates' motivational orientations and subsequent activities of innovation, introducing a right amount of pressure may be critical. However, managers should simultaneously acknowledge the delicate balance of such processes.

Keywords: management control, cybernetic control systems, framework of enabling formalization, innovation, autonomous motivation, interpretive research

TIIVISTELMÄ

Tämän tutkimuksen tavoitteena on edistää syvälliseen tapaustutkimukseen nojaten ymmärrystämme siitä, miten johdon ohjausjärjestelmät ja niihin liittyvät prosessit voisivat samanaikaisesti tukea operatiivista tehokkuutta ja innovointia. Monessa organisaatiossa näiden usein ristiriitaisten pyrkimysten johtaminen on tärkeä haaste nykyisessä tietointensiivisessä yritys ympäristössä. Adler ja Borys (1996) ovat esitelleet niiden välisten jännitteiden tasapainoittamiseksi viitekehyksen, joka sisältää neljä ohjausjärjestelmien erityispiirrettä: 'järjestelmän läpinäkyvyys', 'operatiivinen läpinäkyvyys', 'prosessin kehitysmahdollisuus' ja 'joustavuus'.

Vaikka Adlerin ja Borysin (1996) teoreettisen viitekehyksen neljä erityispiirrettä olivat suurelta osin havaittavissa kohdeorganisaation kyberneettisissä ohjausjärjestelmissä (kts. Malmi & Brown 2008, 291; Green & Welsh 1988, 289), löydökset viittaavat siihen, että innovointia ja erityisesti sen tärkeää komponenttia (autonomista) motivaatiota ei näiden järjestelmien kautta tuettu organisaatiossa riittävästi. Motivaatioon liittyvät havainnot viitoittivat analysoimaan tutkimuksen löydöksiä psykologian kirjallisuuden avulla ja soveltamaan itseohjautuvuusteoriaa (esim. Deci & Ryan 1985), joka korostaa autonomisen motivaation saavuttamisessa kolmen perustarpeen ('kyvykkyys', 'omaehtoisuus' ja 'yhteisöllisyys') tyydyttämistä (Deci & Ryan 1985).

Tapaustutkimuksessa hyödynnettyä abduktiivista päättelyä seuraamalla todettiin, että Adlerin ja Borysin (1996) neljä erityispiirrettä tukevat tutkittavan organisaation innovointia ja sen keskeistä motivaatio-komponenttia usealla eri tavalla. Tutkimuksen materiaali osoittaa kuitenkin myös, että neljä viitekehyksen erityispiirrettä eivät välttämättä tue riittävästi organisaation arvojen ja tavoitteiden sisäistämistä ja siten motivaatiota (vrt. Adler & Borys 1996; Adler & Chen 2011). Tavoitteiden sisäistämässä 'yhteisöllisyyden' tarpeen tyydyttyminen on kriittistä ja tätä voivat kyberneettiset ohjausjärjestelmät oikeanlaisen ohjauspaineen kautta tukea. Tutkimuksen löydökset kuitenkin viittaavat siihen, että 'yhteisöllisyyden' tarvetta ei kohdeorganisaatiossa riittävästi tuettu näiden järjestelmien kautta oikeanlaisen ohjauspaineen puutteesta johtuen. Tietointensiivisessä kohdeorganisaatiossa tämä ilmeni siten, että sen jäsenet keskittyivät enemmän olemassa olevan tiedon käyttöön kuin kehittivät innokkaasti uutta, vaikka juuri innovointitoimintojen tiedostettiin olevan yritykselle kriittisiä menestystekijöitä. Tältä pohjalta tutkimuksessa ehdotetaan, että tukeakseen alaistensa motivaatiota ja siihen pohjautuvia innovaatioprosesseja, johtajien tulee sopivassa määrin antaa oikeanlaista ohjauspainetta ja yhteisöllistä tukea alaisilleen. Heidän tulee samalla kuitenkin ottaa huomioon tällaisten prosessien herkkä tasapaino.

Avainsanat: johdon ohjausjärjestelmät, kyberneettiset ohjausjärjestelmät, enabling formalization -viitekehys, innovointi, autonominen motivaatio, tulkitseva tutkimus

FOREWORD

Management control systems are part of a complex organizational life created by individuals. To understand management control systems from these complex social and organizational aspects – not only from the economic perspective – is, however, challenging and I am therefore deeply grateful to several individuals who helped me during my post-graduate studies.

First, my supervisors – Professor Kari Lukka and Dr. Jan Pfister – without your guidance this journey would have never materialized in the form of this thesis. Your continuous availability and prompt support, your broad experience and insightful comments, and your clear guidance of how to proceed in each situation were essential during the voyage. Along the way, I have always had the feeling that help is available in case needed. I also want to mention Professor Markus Granlund, whose guidance during my master's thesis raised the interest in me for further studies. I am also very grateful to Professor Marc Wouters and Professor Jukka Pellinen for their time and insightful preliminary examination.

I want to warmly also thank the case organization and the interviewees. You made my journey easier in the field by being always available for discussions, ready to share your thoughts and overall, by being willing to participate into this project. I also want to thank the management of the case organization for their open-mindedness towards this endeavour, and especially my 'gatekeeper' for his positive and open approach towards academic research. It was always easy to approach you for establishing further empirical pathways. By working full-time alongside and outside the academia, my post-graduate studies have also required understanding from my superiors and I want to thank you for that. I am especially grateful for my superior at the time of the thesis for his encouragement and supportive stand towards the endeavour.

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Turku, on a late March evening in 2018

Eero Ståhlberg

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ABSTRACT

TIIVISTELMÄ

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1 INTRODUCTION

1.1 Motivation for the study

Innovation, which Zaltman, Duncan and Holbeck (1973, 10) define as “any idea, practice, or material artefact perceived to be new by the relevant unit of adoption”, has become a notable aspect of viability and an important source of sustainable success of organizations as the business environment has witnessed a shift towards the knowledge economy (Bose & Thomas 2007, 653; Ditillo 2004, 405; Lowendahl, Revang & Fosstenlokken 2001, 913; Nonaka, Toyoma & Konno 2000, 5; Tushman & O’Reilly 1997; Wiig 1997, 400; Burns & Stalker 1961).¹ Whereas in the past’s “old” economies, the primary market value was in physical assets, value in the “new” (or current) economy is created and held primarily from the application of the organization’s human assets to create new knowledge (Bose & Thomas 2007, 653; Ditillo 2004, 401). The rationale underlying the significance of human assets is that unlike financial and physical assets, they are hard for competitors to imitate, making them a source of prominent competitive advantage (Kaplan & Norton 2004a, 52). On the other hand, organizations that continue to ignore their human assets, are at risk of losing this valuable advantage (Martin 2000, 22).

Due to the today’s knowledge-intensive business environment, the understanding of how to manage and nurture human assets has become a critical issue for companies to survive and succeed in the global markets (Perrot 2007, 523; Marsh & Burke 2001, 67; Lynn 2000, 49). That holds true especially in expert organizations in which the knowledge of the employees and the creation of new knowledge through the possessed expertise are the fundamental competitive factors in the marketplace. A key issue nowadays in many organizations is therefore how to better manage tensions between efficiency and innovation (Jørgensen & Messner 2009, 99; Chenhall 2003, 129; Kimura & Mourdoukoutas 2000, 43; Duncan 1976; see also Brown & Eisenhardt 1997, 1; Simons 1995). While managers have to keep the human assets alive and vibrant for the processes of innovation (Wiig 1997, 405), efficiency should not be forgotten, and these two competing agendas are conventionally perceived to require different management styles. Organic management style is seen to support innovation processes whereas efficiency is man-

¹ Cf. for instance companies following the prospector strategy as they compete through new products and market development (Simons 1987, 359).

aged with coercive formalization, which is in the literature discussed as “the necessary evil”, a substitute for employee commitment and an impediment to innovation, leading to negative employee attitudes overall.

Innovation processes are largely affected by systematic practices such as management control systems (Amabile 1998, 81), which are traditionally associated with the coercive research stream as they are perceived to set boundaries to innovation by emphasizing short-term perspective and faster returns instead of highlighting long-term goals, for instance (see e.g. Kraus & Lind 2010, 268; Atrill & McLaney 2007, 195; Turner & Makhija 2006, 206; Clegg & Courpasson 2004, 537; Currie & Kerrin 2003, 1041; see also Otley 2012, 249; Van der Stede 2000; Abernethy & Brownell 1997).² The pressure for organizations to be innovative has, however, highlighted the potential role of formal controls to help initiate and to motivate innovation efforts (Chenhall & Moers 2015, 6). From a behavioural perspective, formal management control systems can be defined as a means of gathering and using information to develop and maintain viable patterns of behaviour (Otley 1999, 364), and in a context in which both the required flexibility for innovations as well as efficiency are vital, a control system ideally promotes a balance between the two. A control system can be perceived to promote efficiency to the extent that it focuses employees’ behaviour on certain rather well-defined activities or objectives, and in this manner, prevents them for engaging in activities that managers consider as inefficient or dysfunctional. In turn, a control system promotes the required flexibility for innovations to the extent that it permits employees to depart from efficiency-promoting procedures (Jørgensen & Messner 2009, 103).³

Because of these competing effects of control systems, the central related challenge for (knowledge-intensive) organizations is to find balance between flexibility and efficiency (Adams & Neely 2000, 23). Organizations, however, are seen to struggle in balancing different uses of management control systems (Mundy 2010, 515).⁴ Efficiency is often elevated over flexibility (Chang & Birkett 2004). Coercive formalization dominates and concurrently, many organizations are still seen to suffer from a shortage of innovations although they are in today’s competitive

² These kinds of problems are considered to exist especially in project environments (Alvesson & Kärreman 2004, 442; Cardinal 2001, 25).

³ In a situation when it is not precisely clear ex ante how a particular goal should be reached or how a certain activity is to be carried out, flexibility can be considered as desirable (Jørgensen & Messner 2009, 103).

⁴ For instance, Otley (2012, 256) argues that the balance in organizations is “too heavily weighted in the direction of measuring and assessing results rather than the processes that have led to those results”.

business landscape considered as a necessity (Sáenz, Aramburu & Rivera 2009, 22; Kupi, Ilomäki, Talja, Sillanpää & Lönnqvist 2008, 22).

In order to obtain this balance, the use of management control systems need to be considered not just from an economic perspective, but also from a social, behavioural, and managerial perspective, within an overall organizational context, as argued by Otley (1999, 381; see also Chenhall 2003, 161).⁵ This is especially the case in the current knowledge economy as the balancing of the competing aims of efficiency and flexibility is critical for companies to achieve their full potential and to make a sound, balanced, and competitive enterprise (cf. Mundy 2010, 499–500; Turner & Makhija 2006, 197; Marsh & Burke 2001, 67; Wiig 1997, 400). An emerging control paradigm address the potential of control systems from these different perspectives and suggests that even when innovations are highly important, there is still good reasons for managers to employ formal control. Rather than management control systems being a hindrance, within this emerging control paradigm they are seen to have potential, even a central facilitating role in innovation by advancing organizations to innovate and adapt (see e.g. Pfister & Lukka 2017; Grabner & Speckbacher 2016; Adler & Chen 2011; Li, Lee, Li & Liu 2010, 235–237; Davila, Foster & Onyon 2009, 285, 287; Mouritsen, Hansen & Hansen 2009, 752; Cardinal 2001, 29–30; Nixon 1998; Simons 1995, 92).

It is these social and organizational aspects of control systems that make them such a fascinating topic for academic research and such a challenge to practitioners (cf. Otley 1999, 381). The enthusiasm for this study rose from these aspects. From the importance to enhance our understanding not only from the economic perspective but also in order to comprehend better these complex social and organizational aspects: whether management control systems could play pivotal parts in the future success of organizations by supporting the competing aims of efficiency and flexibility (cf. Chenhall 2003, 132) and how companies could better attain such balance, which itself is seen to represent an organizational capability that is ‘valuable, distinctive, and imperfectly imitable’ (Henri 2006, 539; see also Simons 1990).

Perhaps the most concrete framework to solve this ambidextrous dilemma of formalization have been introduced by Adler and Borys (1996; see also Adler & Chen 2011) with the theoretical notion of enabling bureaucracy, which provides an alternative type of formalization that should be perceived positively by employees and should support them in their fulfilment of their tasks. It entails top management’s support for various forms of flexibility and transparency in formalization and as such, should concurrently facilitate efficiency and the processes of innovation. According to the framework, this balance between efficiency and inno-

⁵ Innovation is considered as a key challenge that has motivated thinking about control in more complex ways (Chenhall & Moers 2015, 10).

vation should be achieved when formal procedures are rather enabling than coercive, as defined by Adler and Borys (1996). On these grounds, the concept of enabling bureaucracy will be reflected throughout the study and I will start by presenting the prior studies (i.e. development) related to the framework.

1.2 Prior studies

Since the original paper by Adler and Borys (1996), several recent studies in management accounting literature have focused on the concept of enabling of bureaucracy with its four features (repair, internal transparency, global transparency, and flexibility)⁶ and how the enabling approach to control can be put into practice. It was initially adopted by Ahrens and Chapman (2004) in a single-case field study carried out over a two-year period. In their study Ahrens and Chapman (2004) introduce a division of a restaurant chain, in which they present how management achieved simultaneous efficiency and flexibility by using management control systems in enabling ways. In describing how the studied organization succeeded in this, the authors draw upon the suggested four features of enabling bureaucracy by Adler and Borys (1996). The elements of repair and flexibility “could be traced in the ways in which as the Restaurant Division hoped managers might use the formal controls to support and enhance their work” (p. 296). Managers concurrently used the systems to create also internal and global transparency of operations by explicating various reports and tools as well as by highlighting certain strategic issues.

Through the four features, Ahrens and Chapman (2004) discovered that the processes of coercive formalization existed side by side with the enabling counterparts. In the case setting the restaurant managers were expected by the division management “to flexibly respond to local circumstances without stretching the efficiency parameters built into the Restaurant Division menu and its supporting food preparation and dish specification standards” (p. 290). As a conclusion, the authors suggest that the four features of enabling formalization can facilitate field studies of management control systems, as they can be used to define a typology of an enabling organization for contingency researchers to analyze the ways in

⁶ In short, the feature of repair means that users have the autonomy to fix and improve the work process themselves, whereas in a coercive approach such initiatives by the subordinates are not appropriate. Internal transparency is concerned with the visibility of internal processes in the sense that organizational members are in an enabling way able to see throughout and understand the logic of a system, while global transparency relates to the visibility of the overall context in which the members perform their specific duties. Flexibility feature, in turn, refers to the organizational members’ discretion over the use of control systems.

which organizations apply their management control systems in the simultaneous pursuit of efficiency and flexibility.

Since Ahrens and Chapman's (2004) study, coercive and enabling forms of bureaucracy have been examined by other management accounting scholars, too. For instance, Wouters and Wilderom's (2008) study concentrates on the design and implementation processes of enabling control systems through a longitudinal field study of a logistics department and demonstrates the importance of taking local knowledge and experience, experimentation, and learning-oriented mentality (called "professionalism" in the study) into such processes. Chapman and Kihn (2009) used a survey data collected from 169 managers to examine the relationship between information system integration and the four design characteristics of enabling control systems, and whether these are associated with business unit performance. They argue that information system integration fosters the four design characteristics that constitute an enabling approach to management control, while the enabling approach relates positively to both perceived system success and business unit performance.

Jørgensen and Messner (2009) carried out a field study in a manufacturing organization to demonstrate how the combination of different control mechanisms helps to balance efficiency and flexibility. They found that through the four features of enabling formalization the case organization had found a balance between efficiency and flexibility, a balance in such way that top management, engineers, or managers did not voice dissatisfaction with the existing combination of efficiency and flexibility. In addition, by focusing on the introduction of a new product strategy in their case organization, they particularly concentrated on the enabling feature of repair. The findings suggested that in the case of organizational change, an enabling approach to control can prove very fruitful as employees then have the possibility to repair the control system according to new needs and circumstances. However, if the changes are strategically important, the repair efforts were not perceived as wholly satisfactory. In such case, the authors note that repair may require more top-down management initiative and intervention.

Adler and Chen (2011) developed a theoretical notion on how companies can use management control systems effectively to support relatively uncertain and creative tasks without undermining the required employee motivation. They see this puzzle to be especially important in contexts where individuals face a dual challenge of demonstrating innovativeness and embracing the formal controls that coordinate their creative activities with others' (referred as large-scale collaborative creativity in the study). To solve this dual-goal paradox, they build on two clusters of concepts from the psychology literature – perceived locus of causality and self-construal – and develop an integrative model summarized in 15 propositions.

Within these propositions management control systems are addressed primarily through Simons' (1995) levers of control framework that managers can use to balance innovation and control but which, however, is seen to leave unanswered the question how the levers influence employees' motivational orientations. Whereas the authors propose that two of the levers – beliefs and interactive systems – are positively associated with different types of motivation *per se*, for the boundary and diagnostic systems the association is suggested to depend on whether the system is used in an enabling or coercive way.⁷ By applying the two concepts from the psychology literature, Adler and Chen (2011) argue that achieving large-scale collaborative creativity can be fostered through appropriate (enabling) management control system design and attraction-selection-attrition policies.

Perhaps the most recent study addressing the concept of enabling control is conducted by Jordan and Messner (2012). The study draws upon a longitudinal field study in a manufacturing organization and focus on the operational managers' attitudes towards the design characteristics of performance indicators, especially on the incompleteness of the indicators. The findings of the study suggest that the incompleteness of the indicators does not necessarily constitute an issue from the operational managers standpoint as long as flexible handling of the control system is possible. Hence, in case if they are able to treat them as means rather than ends when carrying out their tasks.

⁷ Boundary systems delineate the acceptable domain of activity for the members of the organization. They are therefore in many ways a prerequisite for organizational freedom and entrepreneurial behaviour. Although they are essentially constraining mechanisms, they enable organizations to achieve maximum flexibility. Within these boundaries, appropriate diagnostic control systems allow maximum autonomy for organizational participants. Individuals are held accountable for results but have the autonomy to choose how to accomplish the desired ends and because of such characteristics, diagnostic control systems are perceived to assist in the efficient implementation of innovation (Simons 1995, 39–41, 53, 59–61). These formal feedback systems are designed to ensure predictable achievement of objectives, thereby making measurement and goal setting as the key design parameters of them. Malmi and Brown (2008, 291) divide cybernetic controls into budgets, financial, non-financial, and hybrid measurement systems, and in-line with such 'package', Adler and Chen (2011, 75) perceive diagnostic control systems to include profit plans and budgets, goals and objectives systems, project monitoring systems, and strategic planning systems, which are all characterized by monitoring of organizational outcomes and correcting deviations from pre-set standards. As a result of such similarities, traditional cybernetic controls with features of measurement and relative evaluation, are often seen as diagnostic control systems (Simons 1995; see also Green & Welsh 1988, 289).

The authors, however, note that the flexible use of performance indicators becomes more difficult to sustain once top management signals an increased importance of the indicators. With this notion, they identify the balancing act of performance indicators (or management control systems) and consider that the flexible use of the indicators can ‘easily’ give way to control and evaluation that leaves operational management with few possibilities other than to try and “make the numbers”. While the authors recognize that such control focus can have important motivational effects, they suggest that “if middle managers and employees do not sufficiently understand or agree with such a prioritization, i.e. if they regard the control system as incomplete in important respects, tensions and dissatisfaction are likely to emerge”. Taken together, Jordan and Messner’s (2012) study can be seen to add to our understanding of how operational management’s attitudes toward control can change over time, and what is the role of incomplete accounting information in such situations.

Based on the prior studies, it can be said that the concept of enabling bureaucracy has proven to be a useful concept in management accounting research. A large portion of the prior studies are, however, conducted in the manufacturing industry. Service industry has received less attention in applying the framework and this provides an opportunity for the development of the concept through further insights gained from the field. Overall, it can be perceived that still little is known about the control practises of knowledge-intensive organizations and the control systems’ coercive and enabling characteristics in such environments (cf. Granlund & Taipaleenmäki 2005, 22; Ditillo 2004, 401, 417).

1.3 Purpose of the study

The main purpose of this doctoral thesis is to enhance our understanding on how to reach enabling formalization that according to Adler and Borys (1996) and further Adler & Chen (2011) supports subordinates in their fulfilment of their tasks, is perceived positively by them, and supports their motivational orientations, or in other words, their desire and interest to act in a particular way, stimulated by internal or external factor(s). By achieving this, instead of being a hindrance according to the traditional standpoint, management control systems and related processes would facilitate motivation and subsequent innovation that are clearly needed in the current knowledge economy.

To contribute to our existing understanding, the focus in this study will be between top and operational management. Nonaka and Takeuchi (1995, 127; see also Nonaka et al. 2000, 14, 22) refer to this as middle-up-down management. They perceive that middle managers (i.e. the knowledge producers) are at the very centre

of continuous innovation in organizations, positioned at the intersection of the vertical and horizontal flows of information as they often lead the shared knowledge context. They actively interact with others to create knowledge, while especially project managers are seen to play a significant role in the ideation phase of innovations (Sáenz et al. 2009, 34).

The concept of enabling formalization, through the four characteristics, is in the literature perceived to guide organizations to attain innovation (Adler & Borys 1996; Adler & Chen 2011, 75–76; see also Jørgensen & Messner 2009). For instance, Adler and Borys (1996, 79) state: “The innovation goals of these organizations are supported by their enabling organic features...”. The overall understanding of control that emerges from the framework, however, comes across as somewhat passive (see Jordan & Messner 2012; Ahrens & Chapman 2004; Adler & Borys 1996). With this notion, I suggest that the four features of enabling bureaucracy should be further explored: are they more inclined to the conventional view of management control systems, which sees them to some extent as passive tools, primarily providing information to assist in decision making, rather than to a sociological orientation that perceives management control systems more active than passive tools (cf. Chenhall 2003, 129)? The focus in this study will be therefore shifted from the conventional rather passive formalization to a more active one (see e.g. Davila & et al. 2009, 289, 300), which would actively *support* employees in innovative behaviour or in their fulfilment of their tasks, for instance (cf. Adler & Borys 1996). In the end, a management control system itself is not enabling. It is people who use and apply the information acquired through these systems and therefore, rather than the systems being solely for passive measurement, more attention should be allocated to the (active) actors and practices by whom and in which the measurement results are used.

Through such an approach the postulated associations between enabling formalization and innovation are problematized in this study and argued to require further clarification.⁸ This provides the starting point for the analysis. By exploiting con-

⁸ Alvesson & Sandberg (2011) emphasize the distinction between ‘gap-spotting’ and problematization in forming the research questions and study’s objectives (see also Mouritsen 2006). ‘Gap-spotting’ tends to underproblematize the existing literature. It refers to identifying or constructing gaps in existing literature that need to be filled and in this manner, it reinforces rather than challenges the existing theories. Problematization, on the other hand, is launched as a methodology for generating research questions to identify and challenge the assumptions underlying existing theories about a specific subject matter (Alvesson & Sandberg 2011, 247, 249, 253, 254). It should provide a new perspective and can lead to new interesting findings and theories as the route to good theory is not seen to lead through gaps in the literature but through an engagement with problems in the world (Alvesson & Sandberg 2011, 258; Kilduff 2006, 252).

trastive thinking (see Lukka 2014; Lukka & Modell 2010) as a resource in analysing these associations within the case organization, the following two research questions will be addressed: *Does a predominantly enabling formalization support innovation in a knowledge-intensive organization and if so, how? How do these insights add to our understanding of the features of enabling bureaucracy of Adler and Borys (1996)?*

By addressing these questions through an abductive research process (see e.g. Dubois & Gadde 2002), this study contributes to the accounting literature by confirming but also questioning certain postulated roles of the concept of enabling bureaucracy in relation to motivation and subsequent innovation, and thereby adds to the theoretical debate around the theory of Adler and Borys (1996) and further Adler and Chen (2011). Due to such approach, theorizing in the study is not seen to be simply about producing validated knowledge but rather about providing connections and suggestions of relationships that have not been previously suggested (cf. van Maanen, Sörensson & Mitchell 2007, 1148; Weick 1989, 524). Regardless of the novelty of the findings, they will be simultaneously connected to the established literature to demonstrate continuity and for them to be meaningful (cf. Alvesson & Sandberg 2011, 247).

This study builds on a case research and the case company provides a very helpful empirical setting for studying the addressed connections as a knowledge-intensive organization in which innovation activities and the related support can be perceived to be central in ensuring its continuity and future prosperity. By concurrently reflecting the theoretical aspects in the empirical setting, this study should enhance our understanding of how to reach enabling formalization that is perceived positively by the middle managers and helps top management in building an atmosphere in which employees are rather excited than passive, and through such increased motivation bolsters also the organizational innovation processes. In order to achieve these objectives, notions from the psychology literature (see e.g. Amabile 1998; Deci & Ryan 1985) will be brought into the analysis because the component of motivation is considered to be critical in the innovation activities of employees.⁹

From a practical perspective, the study should guide top management – a group that has been somewhat disregarded in the previous studies of enabling bureaucracy as the focus has been rather on their subordinates. The study should provide them with perspectives on how to use management control systems rather as an enabling mechanism than a coercive one to support operational management, and

⁹ Cf. domain theory and method theory (Lukka & Vinnari 2014; Lukka 2005). Whereas a domain theory refers to a particular set of knowledge (e.g. the concept enabling bureaucracy) on a substantive topic area situated in a domain such as management accounting, method theory is a meta-level conceptual system for studying the substantive issue(s) of the domain theory at hand.

how to create an organizational atmosphere that is characterized by enthusiasm and curiosity rather than passive and alienated behaviour.

1.4 Methodological considerations and interpretive case study

All social researchers approach their subjects via “assumptions about the nature of the social world and the way in which it may be investigated” (p. 1). While there are assumptions of an ontological nature that concern the very essence of the phenomena under investigation, epistemological assumptions are about the grounds of knowledge (Burrell & Morgan 1979, 1). They “decide what is to count as acceptable truth by specifying the criteria and process of assessing truth claims” (Chua 1986, 604). These sets of assumptions have then direct implications of a methodological nature of a research (Burrell & Morgan 1979, 2).¹⁰

In interpretive paradigm, the origin of knowledge (epistemological position) can be viewed to derive from the pragmatist way of thought. Organizational life is seen as an emergent social process which existence is not independent of acting individuals but created by them (Roberts & Scapens 1985, 445; Burrell & Morgan 1979). The human world is subjectively created and objectified through human interaction and due to these standpoints, pragmatism underlines that something that works in our co-operation in human social settings, can be considered as truth (Lukka & Modell 2010, 466–467; Blaikie 1991, 120–121; Chua 1986, 615; see also Peirce 1903).¹¹

Following the interpretive paradigm, management accounting can be seen to bind social interactions in organizations across time and space, and these interactions represent the day-to-day use of management accounting systems; in other words, management accounting practice (MacIntosh & Scapens 1990; Ahrens & Chapman 2007). On these grounds, management accounting is in this interpretive study approached as practice.¹² It is seen as socially constructed and interpreted

¹⁰ In addition, Burrell and Morgan (1979) consider assumptions concerning human nature as conceptually separate but nevertheless associated with the ontological and epistemological issues.

¹¹ Pragmatist way of thought is fundamentally grounded on the belief that there is a continuous interplay between “the objective world” and how we perceive and interpret it. Because of such interplay, the role of theory is central in pragmatism: there cannot be any discussion about truth without some preconception of theory – truth is always theory relative and theories are seen to receive their meanings only when they are applied by people in their everyday life contexts (Lukka & Modell 2010, 466–467; see also Peirce 1903).

¹² For studies of management accounting as practice, see e.g. Ahrens & Chapman 2007.

and therefore, the way to understand accounting practice is through an understanding of the organizational reality which is the context of accounting, and which accounting systems are designed to account for (cf. Roberts & Scapens 1985). Social reality is not itself an object but rather seen as a flow of interrelated events and practices and accounting information not only reflects, but through different forms of use also shapes this organizational reality (Roberts & Scapens 1985, 455).

To understand the social reality, researchers in the interpretative paradigm are in general interested in understanding how organizational actors understand, use, and interact with various management control systems in social instances (MacIntosh 1994, 4; Burrell & Morgan 1979; see also Lukka 2014).¹³ Consistent with such perspective, to understand the actual operation of systems, this research pursues to go beyond descriptive accounts and to study the conditions and consequences of accounting practices. Through such an approach it is believed to be possible to gain understanding of the way management accounting contributes to the production and reproduction of organizational life (cf. Roberts & Scapens 1985).

Due to the subjectively-created, emergent social reality, interpretive explanations of the life-world should conform to three criteria: logical consistency, subjective interpretation, and postulate of adequacy (Chua 1986, 614). Logical consistency is concerned with the explanations' clarity and compatibility with the principles of formal logic (Schutz 1962, 43). Whereas subjective interpretation means that the researcher seeks the meaning which an action had for the actor, postulate of adequacy is related to the consistency of scientific explanations (or models) with the common-sense experiences of social reality. These explanations of intention are adequate if they are understandable for the actor him-/herself as well as for his/her fellow-men/-women in terms of common sense interpretations of everyday life (Chua 1986, 614; Schutz 1962, 44).

Taken together, these criteria create challenges for interpretive research. How to provide a clear and logical storyline throughout the study and which procedures and methods to apply to uncover meanings from the social world of the subject organization, for instance (Chua 1986, 614). From an epistemological position this means that the researcher need to be intensively involved in, and largely inseparable from the development of scientific knowledge through close interaction with the researched individuals (Lukka & Modell 2010, 468).

¹³ By considering management accounting as practice, management control brings into focus the possibilities of management control systems as a resource for action rather than as systems to how to constrain individuals and overcome resistance (Ahrens & Chapman 2007, 24). Therefore, the concept of practice is not seen to be suitable for analysing situations that are characterized by an absence of volition and choice (Ahrens & Chapman 2007, 23). Cf. enabling feature of flexibility.

Such possibility for intense involvement was one of the primary reasons for the chosen unit of analysis. While I had an established direct connection with the case organization, also its management's positive stand towards academic research was considered to enable access for instance to internal documents, meetings, and people (cf. Jönsson & Lukka 2006; McKinnon 1988), thereby making it possible to develop scientific knowledge through close interaction with the researched individuals. The case organization is an operative parent of a group of companies but rather than analysing the entire group or one of the subsidiaries within the group, it was chosen for the unit of analysis due to its size, history, and the existence of well established procedures. I considered the parent company to be compact enough without being too small, which was then thought to provide a good number of actors to be interviewed and a clear structure for both and between the top and middle management. Concurrently, I perceived the existing matrix organization that follows the functional and project structures as a research asset to provide perceptions from different angles.

It was also considered important that in the case organization intangible assets would be in a substantial role since many of the prior studies of enabling formalization are conducted in manufacturing environments (cf. Eisenhardt 1989, 533, 536–537). Cybernetic control systems are nowadays fairly well established in organizations.¹⁴ Therefore, these systems characterized with straightforward feedback loop through the features of measurement and relative evaluation (Green & Welsh 1988, 289), and which according to Malmi and Brown (2008, 291) include budgets, financial, non-financial, and hybrid measurement systems, did not particularly guide the choice of the case organization. Rather, I desired a knowledge-intensive company (cf. Sveiby 1989) in which flexibility and innovations are central to its success.

Whereas the epistemological assumptions define the researcher's world-view – what she or he accepts as “truth” – methodological assumptions indicate the appropriate research methods for the gathering of valid evidence for theoretical analysis and conclusions (Chua 1986, 604). A critical question connected to all empirically grounded research is thereby how a researcher approaches the socially constructed empirical world, i.e. what is his or her methodological position.¹⁵ This study applies qualitative research methods that have been defined as “a number of interpretative techniques directed at describing, translating, analyzing, and otherwise inferring the meanings of events or phenomena occurring in the social world”

¹⁴ While financial measurement systems and budgets are the rather traditional management controls, non-financial measurement systems as well as hybrid measurement systems combining financial and non-financial measurement can nowadays be also found in most organizations (see e.g. Marr, Schiuma & Neely 2004; Johanson, Mårtensson & Skoog 2001; Malmi 2001).

¹⁵ For different approaches see e.g. Evered and Louis (1981) and Burrell and Morgan (1979).

(Covaleski & Dirsmith 1990, 543). Following this interpretive notion, “thick” case studies are seen to be most suitable in such endeavors for the search of empirical material (Chua 1986, 615; see also e.g. Lukka & Modell 2010; Burns & Scapens 2000; Humphrey & Scapens 1996). Accordingly, this doctoral thesis is an interpretive case study that “seeks to make sense of human actions by fitting them into a purposeful set of individual aims and a social structure of meanings” (Chua 1986, 614).

Due to the interpretative research’s challenges of uncovering meanings from the social world, emphasis on observation, awareness of linguistic cues, and careful attention to detail are preferred (Chua 1986, 614; see also Dubois & Araujo 2007, 178). This study applies traditional ethnographic methods – interviews and observation, supported by for instance internal documents – in its search for empirical material (cf. Jönsson & Lukka 2006; McKinnon 1988; Chua 1986). After preliminary discussions with the top and middle management, observations started the collection of the empirics (cf. Dubois & Gadde 2002, 557).¹⁶ They were conducted between the period of June 2015 and July 2016 and included different meetings between top and middle management as well as personnel info sessions held by the top management (9 observation occasions in total).¹⁷ During these occasions I listed my central theoretical connections, observations, and ideas to my research diary, and these methods were afterwards supported by the meeting and presentation materials to which I had access (cf. Hammersley & Atkinson 2007, 151). While observer’s presence can cause unusual effects in terms of the observed phenomena (cf. McKinnon 1988, 37), my presence in either of these occasions could not be seen to affect much the “normal” situation. Although the observations provided deeper understanding and some additional perspectives, they were rather consistent with the participants’ own perceptions about the meetings as well as the info sessions, which were gained afterwards during the private discussions with them.¹⁸

In order to reach the necessary depths of subjectivity and to understand the fundamental meanings that underlie the social life observed in these meetings, semi-

¹⁶ Dubois and Gadde (2002, 557) make a distinction between active and passive data. Whereas passive data is something the researcher has set out to find, i.e., it appears through search, active data is something that is associated with discovery. Discovering active data requires more passive research methods and (less predetermined) researcher. For instance, observation at meetings can provide data that could have never been found through search.

¹⁷ See appendix 3 for further details.

¹⁸ McKinnon (1988, 37) consider observer-caused effects and data access limitations as the two of the four main threats to the validity and reliability in field studies.

structured interviews were considered as the primary method for collecting empirical material for the study. Following the observations from the meetings, the first phase interviews were during June and July 2016 conducted in a rather intense manner (cf. Hammersley & Atkinson 2007, 36–37). I found this to be beneficial. While it kept the interviews flexible without any strict preconceptions, it also helped in envisioning the big picture as there were no long gaps between the interviews. After analysing the first phase interviews, the findings were further discussed with three department and two project managers (i.e. the second phase interviews) to confirm their explanatory value and “making of sense” (see also chapter 6.2). The interviews lasted in total approximately 19 hours and were in most part direct person-to-person interviews (three audio telephone interviews).¹⁹ Twenty-two interviews were conducted (17 persons), which included five top managers and six department as well as project managers (i.e. the middle management)²⁰. The interviewees were chosen in a manner that they represented different organizational functions and levels but also different locations within each of the three manager ‘groups’ (cf. Ulrich and Smallwood 2004).²¹ By interviewing multiple groups within the organization, the first phase interviews provided from various standpoints a good understanding of the (innovation) situation within the organization and certain critical findings for further analysis.

An interview guide was used during the first phase interviews (see Kreiner & Mouritsen 2005). Prior these occasions, I constructed a general set of questions, which were based around themes that are now reflected in the three main chapters of this study.²² These questions were used as a foundation for the semi-structured interviews and according to the organizational position and role of the interviewee; designated themes were emphasized during the interview. At the same time, in order to be able to conduct reliable and valid comparisons, certain questions were asked from all of the interviewees. These themes included the general knowledge level within the organization, the importance and existence of innovation processes in the organization, general view of the organization’s management control practices, most important management control system in his/her daily work, and the role of meetings between top and middle management.

¹⁹ For further information of the interviews, see appendix 1.

²⁰ Managers that were considered as top managers had middle managers under them in the organization structure, whereas middle managers were those that were leading either a department or projects.

²¹ Ulrich and Smallwood (2004, 124) refer this as the 360-degree assessment. Rather than interviewing only the management team (90-degree assessment), the 360-degree assessment gives ‘voice’ to multiple groups within the organization. In turn, a 720-degree assessment includes collecting information not only from inside of the organization but also from external groups.

²² See appendix 2 for an example of the theme guide.

Apart from these (comparative) themes, the interview guide was used as a flexible premise for the comprehension of the discussed matters, rather than as a driver of interaction in, and a template for the outcome of the interview (cf. Kreiner & Mouritsen 2005, 158). During the discussions, I focused on listening and making follow-up questions (see Rovio-Johansson, Solli & Tengblad 2005, 22–23). Through such focus in the interviews, they ended up being rather open discussions in which I was not forced to tease out the information from the interviewees, but it came out rather naturally (cf. Kreiner & Mouritsen 2005). In order to create such an open discussion between the interviewer and the interviewee, the focus needed to be on the dialogue instead of making notes, which emphasizes the importance of recording the interviews for proper analysis. Except the introduction part, the interviews were all recorded and afterwards transcribed.

The interviews as well as observations were supported by different internal documents and informal communications. Firstly, I had access to the case organization's document management system, which enabled me to review for instance different meeting materials, reports, operating procedures, and top management's presentations for personnel. Secondly, I was given access to the material of the case organization's latest personnel survey conducted by a third party. This system I found especially helpful as it was technically advanced, providing a general view of the relative situation in the case organization but at the same time allowing the user to drill-down to more detailed information. Lastly, also informal occasions such as phone calls, lunches, and random visits and face-to-face discussions were used to enrich the insights formulated from the interviews and observations. To develop thick explanations from these empirical materials (see Lukka & Modell 2010; Ahrens & Chapman 2006, 832; Geertz 1973), an important means in interpretive research, while it is also consistent with the pragmatist way of thought, is the process of abduction (Lukka & Modell 2010; Dubois & Gadde 2002; Peirce 1903). I will therefore turn next to abductive research process in detail.²³

1.5 Abductive analysis

Abductive reasoning is a continuous undertaking, impacting all of the phases of the research process when analysis proceeds by the continuous interplay between theoretical concepts and empirical data (Van Maanen, Sörensson & Mitchell 2007, 1149). Instead of theory, the abductive process tends to start from the empirical

²³ In assessing the quality of case studies, description of the underlying methodological procedure is considered to be a shortcoming in many of them (see e.g. Dubois and Gadde 2014, Piekkari, Plakoyiannaki & Welch 2010; Hurmerinta-Peltomäki & Nummela 2006; Payne & Williams 2005).

findings (cf. deduction) and typically, a striking empirical observation is confronted at the beginning of the endeavour, begin for an explanation and thereby triggering the process of “making sense” to commence (Lukka 2014, 563; Lukka & Modell 2010, 467).

I originally noted such unanticipated, surprising issues during another research project that focused on group-wide issues and to the related group companies, the case organization being an operative parent company of the group.²⁴ Flexibility features came strongly forth within the group but at the same time, innovativeness was by the members of the organization considered to be decreasing, although it was considered important in the group and one of the reasons for its past success. From this base, the issues were afterwards discussed further with both top and middle management of the case organization to compare if my preliminary observations were consistent with their views on the matters. Concurrently and before the discussions, I explored the literature to relate my observations to theoretical knowledge, and to develop my understanding of the subject and ultimately, to start the process of “making sense” of the preliminary empirical findings (cf. Lukka & Modell 2010; Hanson 1961; Hanson 1958).

In the abductive process, theoretically informed explanations are developed to new, and often surprising empirical observations (Lukka & Modell 2010, 467). Therefore, along the process the analytical theory based framework is of great importance as it consists of articulated ‘preconceptions’. Theory, however, cannot be understood without findings from the empirical fieldwork and vice versa (Dubois & Gadde 2002). The actual empirical fieldwork for this study started from the meeting observations. In parallel with the first observation occasions, I delved myself further into the literature to enhance my understanding of the related theoretical concepts, supported by continuous and frequent exchange of ideas with my supervisors. Literature, however, provided divergent perspectives on the relationship between management control systems and innovation as well as for instance on the effects that goal setting has on innovation. On these grounds, I started with an open mind to consider different empirically proven concepts and frameworks that could help in making sense of the observed issues (see Malmi & Granlund 2009, 611–613). By continuously going ‘back and forth’ between my notions from the meetings and theoretical knowledge, I eventually identified the concept of enabling formalization by Adler & Borys (1996) to be the most concrete and helpful when commencing to make sense of the situation in the case organization.

²⁴ In order to question the presuppositions of existing theories and to create more creative theories, enhanced attention to surprising and unexpected is perceived important (van Maanen et al. 2007, 1147).

Throughout the abductive process the researcher should be constantly going ‘back and forth’ between empirical observation and theory (emic – etic) and from one type of research activity to another, thereby allowing to expand his or her understanding of both theory and empirical phenomena (Dubois & Gadde 2002; see also Jönsson & Lukka 2006, 374; Ahrens & Chapman 2006, 837).²⁵ While the preconceptions were articulated in the form of enabling formalization, I continued observing the meetings to gain understanding of the empirical phenomena and how the observations stand in relation to the theoretical concept. However, in explaining the observed associations between enabling bureaucracy and innovation, the framework came across as somewhat deficient: it was not helpful in “making sense” of all of the findings. Interviewing the actors was then considered as the next step. The purpose was to understand how they saw and felt the management control systems in their social context and how my observations were in-line with their thoughts (cf. McKinnon 1988). During these discussions, the observations were in most part confirmed but at the same time, the interviews provided me with new perspectives. While I was drawing the picture about the situation in the case organization, these notions gave me further issues to consider, for instance in relation to how the subordinate managers experienced the management style of the top managers and how it was seen to affect the daily operations of the organization.

The ultimate objective of the abductive research approach is matching theory and reality (Dubois & Gadde 2002, 559). Primacy is assigned to the empirical world in the process, but in the service of theorizing (Van Maanen et al. 2007, 1149). Whereas the empirical observations constitute an input in the successive refinement of concepts, they are as well an output of an abductive study. The input should be ‘tight’, thereby implying that the researcher has articulated his ‘preconceptions’, while the output occurs “during the study because empirical observations inspire changes of the view of theory and vice versa” (p. 558). Over time, the theoretical framework is then modified through analysis and interpretation of empirical findings; partly due to their unanticipated nature, but also because of the theoretical discoveries gained during the process (Dubois & Gadde 2002, 558–559).

Analyzing of the empirical material such as transcripts, meeting observations, and internal documents included “manual” identification of relevant features and similarities, while also the distinct viewpoints were concurrently considered. The purpose of this was to analyze the material from many angles in order to achieve a solid understanding how all the quotes, observations, and documents come together (cf. Hammersley & Atkinson 2007). To support such processes, the data acquired from the interviews was first categorized around themes, i.e. typecasted,

²⁵ Dubois and Gadde (2002) refer to this abduction based approach as “systematic combining”, which is seen as a suitable one for case studies.

and then thoroughly analysed to extract the relevant information (cf. Eskola & Suoranta 2003, 178).²⁶ The data from the comparative questions was further classified in detail into a spreadsheet in order to discover how the actors' opinions do or do not go together.

Abductive research approach is built more on refinement of existing theories than inventing new ones (Van Maanen et al. 2007, 1147; Dubois & Gadde 2002, 559). It is perceived to be closer to an inductive than a deductive approach and seen especially fruitful for case studies if the researcher's objective is to develop theories by discovering new findings – other variables and other relationships (Suddaby 2006; Dubois & Gadde 2002; Eisenhardt 1989; see also Peirce 1903). In terms of theoretical advancement, a weakness of abductive reasoning is the risk related to logical fallacy of “affirming the consequent”. This means that there can be a difference between the explanatory causal element “making sense” and whether it can be inter-subjectively accepted as a likely one (Lukka & Modell 2010, 467, 469). To reduce the number of possible explanations and to crystallize the explanatory causal element of an interpretive research, Lukka and Modell (2010; see also Lukka 2014) suggest mobilizing in combination with abductive reasoning the principles of counterfactual conditionals and contrastive thinking.

The central point of counterfactual conditionals is to “distinguish explanatorily relevant factors from irrelevant ones” (Lukka & Modell 2010, 465). To achieve this, the approach compares factual observation with a counterfactual conditional through a systematic analysis of ‘what-if’ questions (Lukka 2014, 560). True explanatory factors are the ones that make a difference to the phenomenon being explained (Woodward 2003; Ruben 1990) and in order to develop these true explanations, instead of just identifying co-variation between variables, an understanding of how the alleged explanatory factors work in producing the outcomes have to be achieved (Lukka & Modell 2010, 465).

Contrastive thinking, in turn, deals with making the explanation clearer by focusing on the explanandum (i.e. on the explained phenomenon). It has an important role in the abductive reasoning process as it is employed throughout the entire endeavour to focus the attention on particular potential emerging explanatory factors, instead of some others. Through this kind of focus, factors included in the various stages of analysis are selected based on particular ground and such thought experiments relating to the application of counterfactual conditionals and contrastive thinking offer a focused method to consider the researcher's own ideas and etic preferences in relation to those of others (Lukka 2014, 563–564; Lukka & Modell 2010, 465–466; see also Dent 1991).

²⁶ To extract relevant information from the interviews in relation to the research problem, Eskola and Suoranta (2003, 178) recommend typecasting as an adequate method for analysis.

In terms of the principles of counterfactual conditionals and contrastive thinking, the research diary played an important role along the entire research process (cf. Jönsson & Lukka 2006). As Jönsson and Lukka (2006, 381) note, it was helpful in keeping chronologically the awareness of the situational nature of problem solving by recording how facts and possibilities were mobilized there and then. I used it as a tool to write down my ideas in regard to the empirical observations and how they connected to the theoretical concepts at the time (cf. Eskola & Suoranta 2003, 181), but more importantly, to continuously analyze through ‘what-if’ questions the findings’ explanatory value in producing the lack of innovativeness that seemed to exist in the case organization. This helped me to reject some theoretically informed explanations and to focus to the most relevant insights and themes, which then assisted me in generating relevant building blocks for further analysis and theoretical development. This process included several stages of analysis that step-by-step aimed at crystalizing the true explanatory factors. Eventually, this led to the problematization of the four features of enabling bureaucracy: although they do allow innovativeness, they do not necessarily *per se* form a sufficient condition for such processes to happen – more management initiative is demanded by the subordinates in order for them to see the systems as supportive.

1.6 Introduction of the case organization

The case organization is an engineering company that provides design and consultancy services for marine and offshore industries. The background of the organization resides in the European shipbuilding industry and the work references date back to 1984. It is a parent of a group of companies and it has three offices in Finland, while the subsidiaries as well as joint-companies are located in Europe and in Asia. The current number of employees in the case organization solely is approximately 250 and net sales in 2015 were 31 million Euros.

The case organization operates worldwide and covers the entire field of engineering from feasibility studies through concept development to basic design as well as contracting packages. Services include all types of vessels and offshore structures with all disciplines and engineering fields as well as project management, operation support, training, and site supervision. The customer base consists of shipyards, offshore oil and gas industries, ship owners and operators as well as marine equipment and system suppliers. The services are performed on project basis and the size range of the projects varies from smaller ones up to projects of 300000 man-hours, in which subcontracting is often used to certain extent.

The case organization performs knowledge-intensive services and the needed organizational knowledge base for this kind of services has been built through sev-

eral years of experience in the targeted industries. This knowledge base is a competitive factor for the organization and provides grounds for targeting long-term customer relationships. The fundamental organizational culture can be viewed as an engineering-culture in which knowledge creation plays an important role. Innovations can occur throughout the life cycle of any floating marine or offshore structure but especially in the concept design phase.

Innovations can occur during all the phases of vessel designing, although depending a bit about the scale of the innovation. [...] They are extremely critical for this company and without them we cannot survive. (Project manager A, interview 15.6.2016)

The case organization is a well-known player in the targeted industries and the brand of the company is built on the customer promise of innovative solutions. This can be then seen in the expectations of the customers as according to the interviewees that operate in the customer surface, such solutions are expected from the case company by its clients (e.g. Project Manager F, interview 5.7.2016; Director B, interview 23.6.2016; Director A, interview 20.6.2016).

Customers do expect innovations from us [from the case organization]. We are not cheap and therefore, in many cases standard performance is not enough from us. They expect something else from us and this something else is innovative solutions. (Department manager C, interview 23.6.2016)

In the case organization, innovative solutions were seen as something that had played a big part in the organization's past success, while their importance was also addressed during the interviews in order to ensure a prosperous future for the company. The case organization operates on global and competitive markets in which there are more cost-efficient options available and because of this, it needs to be able to provide something more than just 'a standard performance'.

This firm has been able to create new things and therefore we need to try to cherish it [innovativeness] so that we do not get the image of a copy house. (Project manager F, interview 5.7.2016)

To summarize the characteristics of the case organization, it can be addressed to be a knowledge-intensive, medium-sized engineering and consulting company that operates globally on project basis, and in which innovations play a relatively big role.

1.7 Structure of the thesis

The study is divided into six chapters. In the beginning of the first chapter the study's topic, motivation, related prior studies, and purpose are presented. Then methodological issues with abductive analysis are considered, followed by the introduction of the case organization. The second chapter starts by presenting the notion of enabling bureaucracy. A typology of an organization will be presented, with key forces encouraging the coercive and the enabling logic. This will be followed by the four features of enabling bureaucracy, through which enabling formalization should be achieved. Then management control systems will be discussed in this context. They will be defined, while their role (design versus usage) in achieving the enabling bureaucracy will be also reflected.

After considering the notion of enabling bureaucracy, the study will turn to cybernetic control systems, i.e. to management control systems that are characterized with straightforward feedback loop through the features of measurement and relative evaluation (Green & Welsh 1988, 289). The cybernetic control systems are considered to form a package and due to this, consideration of the joint effects of them is seen necessary (see Malmi & Granlund 2009, 610). The cybernetic control package will be addressed according to Malmi and Brown's (2008, 291) distinction who divide them into four systems, namely financial measurement systems, budgets, non-financial measurement systems, and hybrid measurement systems.

At the end of the second chapter, these cybernetic control systems will be discussed in the case environment. Their characteristics and role in the case organization will be presented, while simultaneously considering the four enabling features in terms of these systems. After the systems are covered according to Malmi and Brown's (2008, 291) distinction, they will be considered together. The case organization's yearly cybernetic control cycle will be discussed and through this cycle perspective the separate systems are addressed as a package. Following this, the systems' and the package's enabling features are summarized.

The third chapter focuses specifically on the activities of innovation. It commences by explaining and defining innovation. Then the thesis turns to components of innovation (domain knowledge, creative-thinking skills, and motivation), which are followed by the consideration of the innovation structure of organizations, consisting of informal (e.g. organizational atmosphere) and formal (e.g. IT systems) innovation structure. On the latter part of the third chapter the earlier addressed issues in the chapter will be empirically discussed. The empirical part starts with the 'raw materials' of innovation, namely domain knowledge and creative-thinking skills, after which I will turn to the informal and formal innovation structures of the case organization. Motivation is considered as a critical component of innovation, effecting the entire innovation process as it determines what people will actually do. It will be therefore addressed at the end of the empirical

part of the chapter, and further theoretically considered in the begin of the fourth chapter.

The fourth chapter commences by discussing the basic psychological needs of autonomy, competence, and relatedness. These basic needs must be fulfilled in order for the employees to be autonomously motivated, which is often perceived as a prerequisite of innovative behaviour. Managers can increase autonomous motivation considerably by even subtle changes in an organization's environment and therefore, the social context of innovation will be reflected. The social environment will be addressed according to the three basic psychological needs and under these categories I will consider different management enabled mechanisms that have been recognized to hinder or encourage innovation by influencing motivational state of employees. These management practices are based on more than two decades of research (see Amabile 1998; Conti, Coon, Lazenby & Herron 1996; Amabile 1988) and include practices such as excessive control, goal setting, and evaluation and follow-up. Due to the management perspective, these practices can be seen to be closely connected to management control systems, whereas for some of these mechanisms there is also a delicate balance in how they appear in an organization. These balancing acts will be discussed at the end of the social environment -subchapter.

Then the case organization's social environment of innovation will be addressed drawing on to the three basic psychological needs. How were these needs and overall motivation and subsequent innovation supported through management practices, and especially how the features of enabling formalization were endorsing these activities within the company? The empirical part starts with the need of autonomy, followed by competence and relatedness. The basic psychological need of relatedness is further partitioned to organization and project level perspectives for more comprehensive understanding of the matter. At the end of the empirical part the delicate balance of the management practices influencing innovation is further considered, and how these delicate practices specifically affected the processes of innovation within the case organization.

In the discussion, the central points of the thesis are reflected and discussed, and the study shortly summarized. First, the supporting role of the features of enabling formalization in terms of motivation and subsequent innovation is addressed. Then the critical component of motivation is considered further through the basic psychological need of relatedness, which is seen to be centrally important for employees to "take in" the organizational goals and to be autonomously motivated. This will lead to the last section of the discussion chapter, in which employees "taking in" the organizational goals and its effects on the processes of innovation will be discussed, and how such processes and their further development were seen within the case organization.

The sixth and last chapter concludes the study. First, the main findings and their theoretical contributions are considered, while concurrently providing perspectives for practice. Then the study will be evaluated. Whereas the evaluation will be done in a more general level through the mechanisms recognized by McKinnon (1988) to overcome main types of threats to validity and reliability in field studies, also more specific features of the abductive research process will be considered. At the end of the chapter, I will discuss certain directions for future research.

2 MANAGEMENT CONTROL AND OPERATIONAL MANAGEMENT

2.1 Enabling formalization in achieving balance between efficiency and flexibility

2.1.1 A typology of organizations

A key issue in many organizations nowadays is how to better manage tensions between efficiency and innovation (Jørgensen & Messner 2009, 99; Duncan 1976). These two competing agendas are conventionally perceived to require different management styles. Organic management style is seen to support innovativeness while efficiency is managed with coercive formalization, which is in the literature discussed as “the necessary evil”, a substitute for employee commitment and an impediment to innovation, leading to negative employee attitudes overall. In case formalization undermines employees’ commitment and fosters dissatisfaction, it is addressed to limit also innovation since “employees in formalized settings have little motivation to contribute to the complex non-routine tasks that constitute innovation” (Adler & Borys 1996, 63).

Managers have a natural tendency to use management control systems coercively rather than in ways that give employees autonomy in performing their activities (Wouters & Wilderom 2008; Ahrens & Chapman 2004; see also Mundy 2010). This overcontrol can be fatal for organizations that wish to be innovative. Recent research literature nevertheless suggests that organizations can simultaneously have control and innovation, and can solve this ambidextrous dilemma of formalization. To solve this dilemma, Adler and Borys (1996) introduced the theoretical notion of enabling bureaucracy to provide an alternative type of formalization that is perceived positively by employees and supports them in their fulfilment of their tasks. It addresses four specific features and entails top management’s support through these features for various forms of flexibility and transparency in formalization and as such, should facilitate efficiency and innovation concurrently. Enabling procedures are seen to help committed employees to do their jobs more effectively, while supporting also the organization’s innovation objectives. In turn, coercive formalization is designed to coerce effort and compliance from employees, which is perceived to foster dissatisfaction among them.

With the notion of enabling bureaucracy, Adler and Borys (1996) thus consider that control can be achieved while still being faithful to the knowledge processes. The typology of an organization, including the enabling bureaucracy –aspect, is presented in Figure 1.

		TYPE OF FORMALIZATION	
		Enabling	Coercive
DEGREE OF FORMALIZATION	Low	Organic	Autocratic
	High	Enabling Bureaucracy	Mechanistic

Figure 1 A typology of organizations (Adler & Borys, 1996, 78)

Figure 1 presents the typology of an organization, with on one dimension the degree of formalization (required by the routines of the task), and on the other dimension the type of control (or formalization). Distinguishing between enabling and coercive types of control – formalization designed to enable employees to master their tasks and formalization designed to coerce effort and compliance from employees – is seen as a fruitful way to theorize the difference between good and bad procedures as experienced by employees. In reality both the degree and the type of formalization, however, are considered to be continuous variables (Adler & Borys 1996, 62, 77–83).

Employees in knowledge-intensive organizations are typically involved with a mix of routine and non-routine tasks. Conventionally, it is viewed that such mixed situation creates an organization design dilemma because the routine parts cannot be concurrently managed in a mechanistic, coercive, and bureaucratic way, whereas the non-routine parts are managed in an organic and empowering way for the same employees (Adler & Borys 1996, 79). Adler and Borys (1996), however, sees this dilemma as a figment and by applying enabling bureaucracy, organiza-

tions are considered to be able to overcome it and to become effectively ambidextrous. Organizations' innovation objectives are "supported by their enabling-organic features while their efficiency and control requirements are supported by the collaborative, shared control afforded by their enabling-bureaucratic features" (Adler & Borys 1996, 79). Ultimately, organizations are seen to attempt to design and operate formal systems that support employees (Ahrens & Chapman 2004, 279).

In order to achieve enabling bureaucracy, organizations should avoid forces encouraging coercive logic. Asymmetries of power is acknowledged as one of such force. Between management and subordinates, asymmetries of power allows managers to play a dominant role in shaping the extent and type of formalization, and avoiding asymmetries of power in an organization refers to decentralizing the organization; hence empowering employees. Adler and Borys (1996, 81–82) hypothesize that in organizations characterized by greater asymmetry, the coercion logic will appear as inevitable, while the enabling logic will tend to appear somewhat utopian and naïve. Another such force encouraging coercive logic is the absence of reality checks, which is concerned with competitive rivalry or with demanding customers in order for the organization to have a compelling "reality check". External stimulus for improvement is considered therefore important and as a prerequisite for maintaining adaptability in today's fast changing business environment. However, the presence of reality check is no guarantee of enabling orientation while in the absence of such checks, an organization is seen to become inwardly focused.

In turn, participative design processes, competitive pressure, and automation are considered as forces that encourage the enabling logic. Participative design processes are seen as less-coercive oriented because "consensus is sought by rational argument, and participants acknowledge the right of each to participate in the dialogue as autonomous and equal partners" (p. 82).²⁷ Secondly, through the intensification of competitive pressure organizations are forced to seek out opportunities to improve performance and it is perceived that the advantages of the enabling logic can be bolstered by such demands of task environment. Automation, in turn, is seen to encourage organizations to design jobs that require more skills and discretion. These qualities of job 'independence' should then expedite organizations to implement work procedures that empower their employees (Adler & Borys 1996, 82–83).

According to Adler and Borys (1996), there are certain distinguishable features of enabling bureaucracy that helps identifying how and why management control

²⁷ Employee involvement in the formulation of procedures is seen to have a positive effect on both attitudinal and technical outcomes as well as on performance (Adler & Borys 1996, 75, 78–79; Kren 1992, 512). See also Hansen and Van der Stede (2004) for participative budgeting.

systems might be used to support rather than constrain operational management. They posit that the usability of formal management systems can be assessed in terms four characteristics, namely repair, internal transparency, global transparency, and flexibility. I will next turn to these features of enabling formalization in detail.

2.1.2 Features of enabling formalization

2.1.2.1 Repair

When top management fears the opportunism of their subordinates more than they value their potential contribution in identifying opportunities for improvement and dealing with unexpected defects, they will adopt an approach according to which such initiatives by the subordinates are not appropriate. In this kind of coercive logic of procedure design, any deviation from standard procedure is questioned. Procedures are designed to highlight to superiors whether subordinates' actions are in compliance, while they are not meant to "help subordinates determine whether the process is operating well, nor to help them navigate the inevitable contingencies of the real work process, nor to help them identify opportunities of improvement" (Adler & Borys 1996, 70–71).

In turn, in a usability approach, repair means that users can fix and improve the work process themselves. An important characteristic of a highly usable system is therefore that breakdowns and other non-programmable events such as user mistakes do not force the work process to a halt (Wouters & Wilderom 2008, 492). In case of a control system this means that for instance direct and indirect cost elements are made visible to enable users to repair organizational processes efficiently and update the relevant accounting structures (Ahrens & Chapman 2004, 280).²⁸ Furthermore, for performance measurement system repair can for example denote that managers have the permission to modify the definition of an indicator, if deemed appropriate. The basic question to be answered is the extent to which organizational members are allowed to solve such defects and continue without

²⁸ Adler & Borys (1996) presented the enabling formalization by using machine technology metaphor. Ahrens and Chapman (2004, 297) note that management control systems, however, "are more strongly and complexly bound up with issues of hierarchy and performance evaluation than is machine production technology". They therefore consider unsurprising that some aspects of enabling bureaucracy in relation to management control systems appear rather coercive in a way that is at odds with expectations based on the original machine technology metaphor by Adler & Borys (1996).

further interruptions to their activities (Jordan & Messner 2012, 546; Jørgensen & Messner 2009, 101; Wouters & Wilderom 2008, 492; Ahrens & Chapman 2004, 279–280).

2.1.2.2 Internal transparency

Another feature, internal transparency, is related to the feature of repair (Ahrens & Chapman 2004, 280).²⁹ It is concerned with the visibility of internal processes for organizational members in the sense that managers are in an enabling way able to see throughout and understand the logic of a system (Jordan & Messner 2012, 546; Jørgensen & Messner 2009, 101; Adler & Borys 1996, 72). They have a proper conception of the system's internal function, i.e. why certain control mechanisms are in place, as well as have information on the system's status (Wouters & Wilderom 2008, 492).

In contrast, when systems are designed in a coercive way to reduce reliance on user's skills, there is little reason to provide users with any visibility into its internal workings (Adler & Borys 1996, 72). The key to a successful design of internal transparency therefore lies in giving layered access to information (Ahrens & Chapman 2004, 280). Enabling systems provide users with an understanding of the underlying theory of the process by clarifying the rationale of the rules, while they also provide users with information of their performance by "providing metrics that help users assess their performance against historical standards" (Adler & Borys 1996, 72). For instance, in order for a financial measurement system to be internally transparent, target values for performance must be communicated to the users of the system (Jordan & Messner 2012, 546; Ahrens & Chapman 2004, 280).

2.1.2.3 Global transparency

Whereas internal transparency is concerned with the internal processes, global transparency relates to the visibility of the overall context in which organizational

²⁹ Jordan and Messner (2012, 560–561) address that while transparency can increase managers' acceptance of a control system because it helps them to understand the rationales behind the form of control, it can also open up the possibility to identify incompleteness in the control system. In such a situation, if managers see the incompleteness as a problem, they may be engaged in efforts to repair the control system. This chain of actions then leads the authors to conclude that granting managers the possibility of repair increases the likelihood that they perceive the control system as enabling.

members perform their specific duties (Jordan & Messner 2012, 546; Jørgensen & Messner 2009, 101; Ahrens & Chapman 2004, 279–280; Adler & Borys 1996, 72–73).³⁰ Global transparency thus denotes the extent to which managers and users comprehend their work's organizational up- and downstream implications (Jørgensen & Messner 2009, 101).

In a coercive approach, global transparency for managers or subordinates is a risk to be minimized and to avoid such transparency, tasks are partitioned (Adler & Borys 1996, 73). Information from beyond one's specific domain of work is not available (Wouters & Wilderom 2008, 492). In an enabling approach, by contrast, managers or subordinates are provided with a range of contextual information designed to help them to interact creatively with the broader organization and environment (Adler & Borys 1996, 73). For example, in the context of most widely used management control tool for making organizational processes globally transparent – the annual budgeting process – global transparency is achieved when the process increases managers' understanding of the organization's strategy and operations (Jordan & Messner 2012, 546; Chapman & Kihn 2009; Ahrens & Chapman 2004, 280).

2.1.2.4 Flexibility

The enabling feature of flexibility indicates about the organizational members' discretion over the use of control systems (Ahrens & Chapman 2004, 280; Adler & Borys 1996, 74). The deskilling logic results in systems that are designed to minimize reliance on users' skills. They do not empower employees but rather implement close monitoring of their actions (Jordan & Messner 2012, 546; Jørgensen & Messner 2009, 101; Adler & Borys 1996, 74).

The enabling approach, on the contrary, is about formal systems enabling users to better manage their work as they allow for some flexibility in terms of how the systems are used, while the degrees of freedom may be determined, for instance, by how strictly management enforces compliance with the system related details (Jordan & Messner 2012, 546; Jørgensen & Messner 2009, 101; Adler & Borys 1996, 74). In the enabling approach to flexibility, users are able to make controlling decisions based on the information provided by these enabling systems without being under close monitoring and scrutiny of their superiors (Wouters & Wilderom 2008, 492).

³⁰ According to Wouters (2009) and Wouters and Wilderom (2008) participative design processes of management control systems (specifically performance measurement system in their case) help achieving both internal and global transparency.

2.1.3 *Defining enabling types of management control systems*

Whereas Adler and Borys (1996) emphasize system design and implementation in terms of the four characteristics of enabling bureaucracy, further research sees them rather as an outcome of an on-going interaction between different actors involved (see e.g. Jordan & Messner 2012; Ahrens & Chapman 2004). As with any tool or framework, the control systems are seen to be only as good as the people who apply them and therefore, whether a control system is regarded as enabling, will to an important extent depend on how top management uses that system for control purposes (see e.g. Groen, Wouters & Wilderom 2017; Jordan & Messner 2012; Mundy 2010, 515–516; Ahrens & Chapman 2004; Adams & Neely 2000, 23; see also Groen, van de Belt & Wilderom 2012, 853–856; Bisbe & Otley 2004, 730).

Overall, it is perceived to be more of a leadership than technical question of how the systems are to be applied in strategic and operative management. While technical design properties are important, it is rather the nature of the communication processes surrounding a control system that determines its influence (Groen et al. 2017; Jordan & Messner 2012, 546; Ahrens & Chapman 2004, 277–278; Mouritsen 2004, 260, 265; Lukka & Granlund 2003, 10–11, 13). As evaluation processes form part of the signals that top management sends, they are of particular relevance in relation to control systems. Once such signals are sent through the processes of evaluation and interpreted by subordinate managers, they can make management accounting appear as a more or less enabling (or coercive) control tool (Jordan & Messner 2012, 546; Ahrens & Chapman 2004, 297).

Cybernetic controls are systems in which a straightforward feedback loop is represented through the characteristics of measurement and relative evaluation (Green & Welsh 1988, 289). Because of such enabling or coercive signalling loop, they will be in the focus of this study and through this focus, this thesis is rather concerned with management control systems' capability to influence and support through evaluation and feedback than with their capability to provide the prerequisites of performance.³¹ In doing so, the study can be seen to follow primarily the performance evaluation strategy for control, which can be either behaviour or outcome based (Eisenhardt 1985, 135–137).

Management control systems have a variation of closely affiliated terms such as 'management accounting' and 'management accounting systems', and they are sometimes used interchangeably (Chenhall 2003, 129). According to Chenhall (2003, 129), management accounting concerns a collection of practices such as budgeting or financial measurement, while management accounting systems refers

³¹ Often referred as input control, which is seen as a form of resource allocation that regulates the antecedent conditions of performance (Eisenhardt 1985, 135–137).

to the systematic use of management accounting to achieve certain objectives. In turn, management controls are those systems, practices, and other activities management put in place in order to support employees and to direct their behaviour. If these are complete systems, as opposed to a simple rule, then such controls can be considered as management control systems (Malmi & Brown 2008, 290). The term management control systems is thus a broader term than management accounting systems and encompasses such systems but includes also other controls such as behaviour controls. The aim of the system is to improve the collective decisions within an organization as well as to support and direct employee behaviour (Bhimani et al. 2008, 615; Chenhall 2003, 129). Pure decision-support systems are not perceived as management control systems and in contrary to organizational control systems, management control systems are only directed to employees whereas organizational controls can include also quality and inventory controls, for instance (Malmi & Brown 2008, 290).

In the existence of a rather broad terminology, a number of definitions of management control systems exist; some of which containing overlaps while others being fairly different from each other (Kimura & Mourdougoutas 2000, 43). In this study management control systems are considered from a behavioural perspective that emphasizes enabling usage of these systems (see Otley 1999, 364). They are considered as a means of gathering and using information to actively develop and maintain viable patterns of behaviour and to assist different level managers in performing their duties (Bhimani, Horngren, Datar & Foster 2008, 615; Otley 1999, 364).

The term 'management control systems' is traditionally used to refer to financial controls and due to this perspective, conventional management control systems focus on enhancing *operational efficiency* (Merchant & Van der Stede 2007, 269; Kimura & Mourdougoutas 2000, 43).³² However, the definition of management control systems has evolved from the traditional standpoint concentrating on the provision of formal, financially quantifiable information to one that embraces a much broader scope of information. This includes non-financial information related to production processes, predictive information and a broad selection of decision support mechanisms (Chenhall 2003, 129; Kimura & Mourdougoutas 2000, 43). In correspondence with this evolution, cybernetic management control systems will be considered in this study according to Malmi and Brown's (2008, 291) distinction that covers financial but also non-financial control systems (cf. Davila

³² The focus on operational efficiency is seen to originate from the primary objective of for-profit firms to create value for their shareholders (Merchant & Van der Stede 2007, 269).

2000, 404).³³ It includes four basic cybernetic systems that have been identified in management control system research, namely budgets, financial, non-financial, and hybrid measurement systems (Malmi & Brown 2008, 292).

An important question when studying multiple accounting systems is whether it is inappropriate to study only one system without considering other controls (Chenhall & Moers 2015, 3; Grabner & Moers 2013). A package of controls recognizes that multiple controls exist and act collectively, and when one control may act as a complement or substitute for another control within such package, consideration of the joint effects of these controls is necessary (Chenhall & Moers 2015, 3; see also Rijdsdijk and van den Ende 2011, 876; Chenhall 2003, 131; Fisher 1998, 61; 1995, 44; Otley 1980). In turn, the elements of a package may be studied individually if there is no systematic relationship between them that could cause some misunderstanding of the effects of studying single practices (Chenhall & Moers 2015, 3).

The cybernetic control systems addressed in this study are considered to have systematic relationships between each other and thereby, to form a package (cf. Malmi & Brown 2008, 287). Lukka and Granlund (2003, 5, 7, 10–13) have suggested that simple but solid management controls may be helpful in knowledge-intensive organizations when they are used beside organic decision and communication practices, and this simplicity implies that technically there may not be a need to invent new tools for management control in these kinds of expert organizations. In case being technically adequate, the cybernetic control package is considered to offer a comprehensive management framework within the case organization that should support strategic learning, communication, and discussion as well as should enable holistic and future oriented active management control (cf. Järvenpää, Partanen & Tuomela 2001, 226–228). I will next turn to these cybernetic control systems and to their enabling (or coercive) features.

³³ According to Davila (2000, 404–405), researching management control systems in relation to innovation cannot be restricted to only traditional accounting measures nor to non-financial indicators but rather, they need to be considered together. For instance, he found out that in new product development environments project managers rely heavily also on non-financial indicators to reduce uncertainty originating from project scope.

2.2 Cybernetic control systems

2.2.1 *Financial measurement systems*

Financial or output measurement is regarded as a core element of a cybernetic control package and it often denotes the apportioning of responsibility (or accountability) for a particular set of outputs to an individual (manager) (Malmi & Brown 2008, 293; Merchant & Van der Stede 2007, 270; Nachum 1999, 924). For instance, in a project environment a project manager can be considered as such accountable individual because follow-up and control of the daily operations are usually done on project basis. Responsibilities are defined at least partially in financial terms and can be expressed in respect of inputs consumed, particular characteristics of the service process (e.g. schedule attainment, customer satisfaction), or financial indicators of performance in these areas (Merchant & Van der Stede 2007, 270; see also Malmi & Brown 2008, 293).

Output measurement is a management control system, which enables to identify the characteristics of the services that are particularly critical for productivity gain (Nachum 1999, 924). Productivity is a ratio between output and input (Gummesson 1998, 5) and “productivity measures express relationships between outcomes and outputs of service processes and the resources or inputs required to operate them” (McLaughlin & Coffey 1990, 46). By reducing the input while keeping up the output, the better the productivity will be (Gummesson 1998, 5). The main objective of output measurement is traditionally seen to be coercive type of productivity improvement, i.e. *efficiency*, and in case managers are trained to utilize the available information, appropriate measures are seen to provide a prognostic tool to achieve such a goal (Nachum 1999, 924, McLaughlin & Coffey 1990, 52, 61).

In the traditional sense the value of output measurement is perceived to lie in such functions – in its impact on the capability to manage and monitor by providing benchmarks for evaluating methods and tools for a more *efficient* utilization of resources (Jääskeläinen, Laihonen, Lönnqvist, Palvalin, Sillanpää, Pekkola & Ukko 2012, 47; Nachum 1999, 924, 941). Financial measures are able to provide a “summary” measure of performance by aggregating the effects of a broad range of operating initiatives across a range of activities into a single (or few) measures, which then enhances the comparability of the effects of the initiatives. They offer a relatively easy and standardized way for the top management to monitor the results of a variety of operational initiatives as the results are usually defined in monetary terms. This is most commonly done in respect of accounting measures such as revenues, costs, profits, and returns, and these financial measures built on accounting rules are relatively precise, objective, and easily verifiable (Merchant &

Van der Stede 2007, 269–270). Financial measurement systems are also effective means for communicating and directing employees' actions towards the desired goals as well as for reducing the possibility of undesirable behaviour by highlighting through measures the effects of such actions (Malmi & Brown 2008, 293; Merchant & Van der Stede 2007, 269–270; Bonner & Sprinkle 2002, 337).

Output measurement has long traditions in manufacturing industries and the assumption underlying in manufacturing environments is that the outputs are standardized as well as quantifiable. Because of this assumption, the related measures are perceived to be inadequate for knowledge-intensive professional services, especially at the innovative end where the outputs vary among various projects and assignments (Nachum 1999, 922–924, 926). Due to the intangible nature of the output and the underlying heterogeneity of the transactions, in such contexts manufacturing oriented measures (e.g. productivity) are not seen to fully satisfy the managerial information needs (Jääskeläinen & Laihonen 2013, 353; Nachum 1999, 922–924, 926, 941–942; Gummesson 1998, 5; see also Davila 2000, 404–405). When relied as a guide for management control, the manufacturing-based measures that are grounded on the assumption of identical quality are perceived to contain a possible danger in service organizations because of the coercive form they often take. They cannot capture the quality variations of the services and therefore, output measurement that does not take into account the quality or learning factors, can often be misleading or even meaningless (Jääskeläinen & Laihonen 2013, 353; Nachum 1999, 922–924, 926, 941–942; Gummesson 1998, 5).

However, measuring the quality of service, or the difference between expectation and perceived performance – as service quality is often defined – is often challenging due to the difficulties in obtaining the necessary data, and it is the intangible aspects of services that are considered to make the measurement of service quality as well as service productivity a difficult task. Regardless of the intangible nature, both the output and input indicators for services must, however, be quantifiable in order to measure quality and productivity. The service inputs and outputs can be measured on an aggregate or a disaggregate basis. Measurement on an aggregate basis refers for example to a company or unit, whereas a disaggregate measurement is concerned with matters such as product or process. Disaggregate indicators are seen to be useful when making operational decisions, while aggregate indicators are considered to be most suitable for making decisions about what services to produce, for instance. Output measurement based on for example time tracking is considered as a highly disaggregate method and such a method requires that the work is identified and recorded before any measurement can take place. Concurrently, time is also an important aspect in terms of service quality due to for example the agreed service delivery point of time (McLaughlin & Coffey 1990, 47–48, 52, 55–56).

Service productivity and service quality together will lead to profitability. The “triplets” are interconnected with each other and related to financial factors that constitute the result of the company. For example, by doing things right from the beginning and doing things that customers need and want, quality improves. This can have a positive impact on productivity in the form of less customer complaints, for instance. Less resources are needed to finish the project and the resources can be used elsewhere, ultimately improving profitability. Improved productivity thereby becomes an antecedent to profitability (Gummesson 1998, 4–6). Due to such interconnections, output measurement of knowledge-intensive service environments should consist of both the efficiency of resource utilization and the value created within and as a result of the assignment (Jääskeläinen et al. 2012, 47; Nachum 1999, 933). Enabling approach to output measurement should take into consideration these aspects. Productivity is supported or combined with quality aspect and when measurement is done in this manner, it is addressed to have a direct positive impact on employee satisfaction and on work-related competencies (Rompho & Siengthai 2012, 502; see also Hopwood 1972a, 166, 168).

2.2.2 Budgets

2.2.2.1 Annual budgeting

Both operative and strategic effectiveness are required for an organization to succeed. Strategic effectiveness refers to the creation of a sustainable position in relation to competitors while operative effectiveness is concerned with the effectiveness of the daily operations. Strategic and operative effectiveness has a firm linkage – the benefit of operative effectiveness is minimal if the organization is carrying out wrong things and products (strategic effectiveness), for instance. Budgeting has a central role in the coordination of the two as it is seen as a link between organization’s future strategic plans and its operative functions (Puolamäki 2007, 19, 132). Due to such linking qualities, budgeting is considered as the cornerstone of the management control process in majority of organizations and a budget can be described as a quantitative expression of management’s proposed plan of action for a future time period (Bhimani et al. 2008, 467; Ikäheimo, Lounasmeri & Walden 2005, 163; Hansen, Otley & Van der Stede 2003, 95; Ekholm & Wallin 2000, 537).

Alhola and Lauslahti (2000, 272) define budget as company’s numerical and verbal action plan which is done for a one-year period. Their definition refers to budgeting type which is known either an annual or traditional budgeting, and the cycle of it can be simplified in the following way:

1. The cycle starts by planning the costs and revenues of the organization as a whole as well as its subunits by collecting the data from the responsible sub-unit managers.
2. After collecting the data, the finance department coordinates the process, resulting to a frame of reference; a set of specific expectations approved by the board of directors against which actual results can be compared.
3. Lastly, during the budgeted year investigations are done about the variations from the agreed plans. If necessary, investigations are followed by corrective actions (Bhimani et al. 2008, 467; Åkerberg 2006, 29–30).

Bhimani et al. (2008, 467) utilize the term “master budget” for such whole and comprehensive, organization-wide set of budgets for a given time period. It is coordinated by the finance department and gathers all the financial projections in the organization’s individual budgets into a single budget, which as a single entity then embraces the impact of both operating and financing decisions. Operating decisions are about the acquisition and utilization of scarce resources, while financing decisions centre on how to obtain the funds to acquire resources. These decisions are then monitored during the year and based on the budget variations, corrective actions are performed if considered necessary.

Hansen and Van der Stede (2004, 418) have aggregated four reasons why organizations use annual budgets: operational planning, performance evaluation, communication of goals, and strategy formation. Companies are seen to use them due to their “ability to weave together all the disparate threads of an organization into a comprehensive plan that serves many different purposes, particularly performance planning and ex post evaluation of actual performance vis-à-vis the plan” (Hansen et al. 2003, 96).³⁴ Especially when uncertainty is high, enabling use of annual budgets is seen to solve goal congruence problems as companywide goals and values can be communicated and strengthened through them (Merchant 1982, 46; Ouchi 1979, 845; see also Van der Stede 2001). Altogether, annual budgeting should be used in two central ways in knowledge-intensive organizations; as a control as well as a planning system (Malmi and Brown 2008, 290; cf. Fisher 1998, 48). Although a great deal of “variety” can be lost in the simplification process of budgeting, Otley (2012, 253) considers that it provides one of the few mechanisms for having a holistic overview of the whole organization³⁵, and for assessing the company’s overall viability in terms of its capability of generating positive profits.

³⁴ Fisher (1998, 48) emphasize that control is separable from the planning aspect; planning determines the organization’s objectives while control attempts to motivate employees to achieve these goals.

³⁵ Cf. the enabling feature of global transparency (see e.g. Chapman & Kihn 2009; Adler & Borys 1996).

Annual budgeting has received criticism in the literature and the above budgeting cycle highlights some of the weaknesses of it such as its ritual nature. (see e.g. Cokins 2008; Atrill & McLaney 2007; Åkerberg 2006; Ikäheimo et al. 2005; Hansen et al. 2003; Hope & Fraser 2003b; Jensen 2001b; Babbini 1999). Neely, Bourne and Adams (2003, 23) have divided these weaknesses to those relating to competitive strategy, business process, and organizational capability. The central issues in relation to these three categories are:

- Competitive strategy:
 - budgets concentrate on cost reduction instead of value creation
 - budgets constrain responsiveness and flexibility as well as are often barrier to change, and
 - budgets add little value – they tend to be bureaucratic and discourage innovativeness.
- Business process:
 - budgets are developed and reported too infrequently – mostly annually and
 - budgets encourage gaming and dysfunctional behaviour.
- Organizational capability:
 - budgets reinforce vertical command as well as control and
 - budgets strengthen departmental barriers rather than encourage knowledge sharing.

The fundamental problem with budgets is perceived to be that they add only limited value to the management of a business. Instead of driving business performance, they are seen to rather encourage internal politics and gaming behaviour as well as are involved with centralization of power. Another central problem with budgets is considered to be their tendency to promote inward-looking, short-term atmosphere that concentrates the organizational members' attention more on achieving a budget figure, than on implementing business strategy and creating shareholder value over the medium to long-term. Budgets are also often considered in companies as a mechanical manner, in which the previous year's budget acts as a basis for the coming one (last-year-plus) (Cokins 2008, 45-46; Atrill & McLaney 2007, 195–196). Such fixed budgets and relative incentives, in case followed strictly, are experienced to support coercive approach rather than flexibility needed for enabling bureaucracy. Further, budgets are perceived to strengthen departmental barriers and act as a barrier for change as well as to reinforce vertical command and control rather than to encourage knowledge sharing and creative thinking required for innovations (Hope & Fraser 2003b, 111; Neely et. al 2003, 23; Wallander 1999, 419).

Despite the criticism towards annual budgeting, it is still a widely used method in companies (Libby & Lindsay 2010, 59–60; Bhimani et al. 2008, 466; Hansen et al. 2003, 95). For instance, Chenhall (2003, 147) notes that large organizations that

have a decentralized organization structures and modern technology do still extensively use traditional management control systems such as budgets.³⁶ Several companies that claim to have abandoned the annual budgeting are seen to have only omitted the term and call a similar type of method merely with a different name (Atrill & McLaney 2007, 199). The role of budgets is just perceived to have evolved from a set of coordinated financial plans to a wide-ranging management system for controlling the business, driving management behaviour, and evaluating performance (Hope & Fraser 2000, 34). However, for budgeting to represent a more active control system, it should be developed towards rolling forms (Järvenpää et al. 2001, 168). Especially in knowledge-intensive organizations that operate in dynamic environments, rolling budgeting or forecasting are seen as useful tools due to the fact that they can be used more flexibly to set and monitor financial targets than traditional budgeting (Lukka & Granlund 2003, 5, 7, 10–13).

2.2.2.2 Rolling budgeting and forecasting

The annual budget often forms the basis for rolling budgeting in the beginning of the budgeting period. During the fiscal year, the rolling budget is then reported with newer versions and the timeframe shortens when approaching the end of the period (Ikäheimo et al. 2005, 178; Hope & Fraser 2003b, 112), whereas a rolling forecast is a plan that is always available for a specified future period by covering the same timeframe as the previous forecast (Bhimani et al. 2008, 473; Åkerberg 2006, 60; Hope & Fraser 2003b, 112; Järvenpää et al. 2001, 173). The major difference between rolling forecasting and rolling budgeting lies in this covered period of time. Another difference is perceived to be the distinction between the use of the rolling forecasting models as rolling forecasts do not set targets to achieve but are rather realistic estimations about the future, which should make it possible for companies to see whether performance is on a trajectory to meet the previously agreed organizational objectives (Ikäheimo et al. 2005, 177–178; Hope & Fraser 2003b, 112). These being the main differences between rolling forecasts and budgets, they can be seen to have a lot in common. Because of this, in the remaining of this thesis they will be addressed together with the above distinctions.

The rolling forecasting models are cyclical, anticipatory, and active follow-up systems that should generate discussion in the management and enable prompt reactions to the changes occurring in the organizations' operating environment. Due to these characteristics, they are considered to be especially suitable in industries

³⁶ Knowledge-intensive organizations are also seen to rely on traditional financial controls such as budgets and financial measurement systems (Widener 2004, 394; Chang & Birkett 2004, 10, 25–26; see also Chenhall 2003, 138)

in which for example changes in demand and prices are significant and unpredictable (Järvenpää et al. 2001, 168, 173, 175). As the current business environment is characterized by rapid changes and uncertainty, for instance, an international consortium of industry, government, and research organizations named the Consortium for Advanced Manufacturing-International (CAM-I) and particularly the European-based CAM-I Beyond Budgeting Round Table group (see www.cam-i.org and www.bbtt.org) recommend abandoning the traditional budgeting process and replacing it with more frequently reported system such as rolling forecasting. The differences of these models are presented in Figure 2.

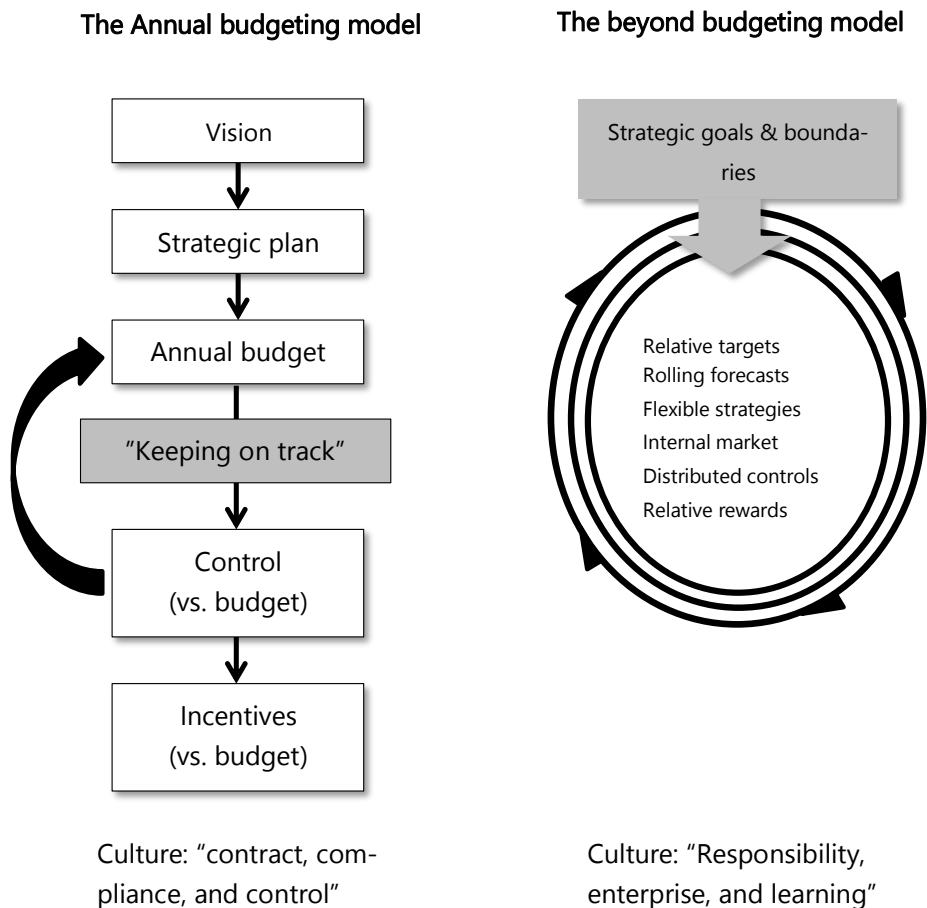


Figure 2 The annual budgeting and beyond budgeting models (Hope & Fraser 2000, 34)

As Figure 2 illustrates, the Beyond Budgeting model considers control as the underlying thread of annual budgeting, which is then followed by incentive

schemes that are in an inflexible way too heavily weighted toward achieving the fixed plan. Such issues are perceived to reinforce inflexibility in organizations and on these grounds, the European-based CAM-I suggests two-stage approach to overcome the related challenges. Firstly, it proposes that the traditional budgeting process, combining planning and performance evaluation, leads to both poor planning and dysfunctional behaviour and therefore, either the traditional budget-based performance evaluations should be radically changed, or the budgeting process completely eliminated. In the second stage, the approach is to radically decentralize the organization and empower lower-level managers' ability to make fast decisions based on the current information provided by the rolling forecasting models (Hansen et al. 2003, 98; Hope & Fraser 2003b, 108–112; Hope & Fraser 2000, 34–35). This is justified by the benefits of the rolling forecasting models, and in relation to traditional budgeting, they are for instance perceived to:

- be more accurate as they are frequently reported according to the market situation
- increase the performance for operational planning
- assist in focusing on essential matters and to the development of them, and
- support the transition from the measurement of performance to the management of performance (Hansen & Van der Stede 2004, 433; Hope & Fraser 2003b, 112; Järvenpää et al. 2001, 174–175).

Concurrently, a central challenge concerning the rolling forecasting models is linking them with the agreed targets. As the models are reported frequently, setting of objectives is seen to be ambiguous (Hansen & Van der Stede 2004, 434; Järvenpää et al. 2001, 173; Amabile 1998, 82). Therefore, for the rolling forecasting models to fulfil their purpose, the systems should always be supported with a separate goal setting scheme (Ikäheimo et al. 2005, 177). However, according to the European-based CAM-I, the targets should not be expected to meet predetermined, internally selected fixed financial targets but rather every part of the company should be judged in a more flexible way, for instance how well its performance compares with its external peers (Hope & Fraser 2003b, 109; Hope & Fraser 2000, 35).

Although the Beyond Budgeting model has not diffused widely in the corporate world, organizations have adopted some of the attributes of the framework such as

the rolling forecasting models and relative performance measures (Becker, Messner & Schäffer 2010, 50).³⁷ Instead of abandoning the traditional budgeting process and replacing it with rolling forecasting models according to the Beyond Budgeting framework, organizations are seen to primarily utilize the rolling forecasting models to complement the annual budgeting process (Ikäheimo 2005, 177). For instance, according to Ekholm and Wallin's (2011, 156; 2000, 537) recent empirical evidence, companies consider annual budgets and rolling forecasting models as complementary systems rather than mutually exclusive alternatives.

Although traditional budgeting is considered to form the backbone of management planning (and control), the rolling forecasting models are seen as useful tools because they can be used more flexibly to monitor financial targets (Lukka & Granlund 2003, 11–12). Rather than using annual budgeting for performance monitoring and strict evaluation, the rolling forecasting models should be applied because they can drive organizational learning through more frequent follow-up, especially in a situation of task and environment uncertainty faced by organizations' in their current economical surroundings (Dent 1990, 12). By developing budgeting towards its rolling forms, it can represent an active control system, in which the deviations from the targeted figures should create extensive discussion in the management and if necessary, corrective actions (Järvenpää et al. 2001, 168).

³⁷ It is perceived that the beyond budgeting model has not diffused widely in the corporate world because it does not offer any new techniques but rather a new management model for the existing tools and techniques. Yet, it is seen to provide valuable insights for knowledge-intensive organizations in terms of management, particularly in terms of designing and applying the management control systems (Becker et al. 2010, 39–50). By doing this, it is considered to be one of the rare attempts in management control literature to address the issue of organizations weighing too heavily the balance in the direction of measuring and assessing results rather than to the processes that have led to those results (Otley 2012, 256; Becker et al. 2010, 50).

2.2.3 Non-financial measurement systems

2.2.3.1 Diversity of the methods

2.2.3.1.1 Overview

Given that it is difficult to manage something that is not being measured, managing intangible assets is perceived to require the support of non-financial measurement (Chenhall & Moers 2015, 4; Mouritsen 2009, 155; Wong 2005, 270; Zhou & Fink 2003, 40; Marr et al. 2004, 552; Bontis 2001, 43; Martin 2000, 21).³⁸ Sayings like ‘we have to measure what we want to manage’ and ‘what is measured is what gets done’ is seen to hold true also for intangible assets (Wong 2005, 270) and on the grounds of such perceptions, measuring and controlling of the intangible assets is nowadays on the agenda of most organizations (Marr et al. 2004, 551; Johanson et al. 2001; 716).

However, measurement of intangible assets is challenging, and therefore managing them in organizations seen to be more often without support than being supported (Amabile 1998, 77). The sources of such measurement challenges can be compacted into four issues: dynamic relationships of intangible assets, time delay of investments in them, disparity of the used measurement units, and the non-physical nature of the assets (Kujansivu, Lönnqvist, Jääskeläinen & Sillanpää 2007, 163; Lönnqvist, Kujansivu & Antola 2005, 51; Kaplan & Norton 2004a, 54; Lönnqvist 2004, 5; Jensen 2001a, 74; Roos & Roos 1997, 421; see also Andriesson 2005). In order to overcome these issues, numerous measurement models have been developed (Sällebrant, Hansen, Bontis & Hofman-Bang 2007, 1473). These various models can be categorized in diverse ways and Figure 3 presents Sveiby’s (2010) classification of the non-financial measurement models.

³⁸ For instance, Vaivio (2004, 39) highlights the focus potential of non-financial measures. He argues that their active use evokes discussions, which may then lead to more effective management of intangible assets.

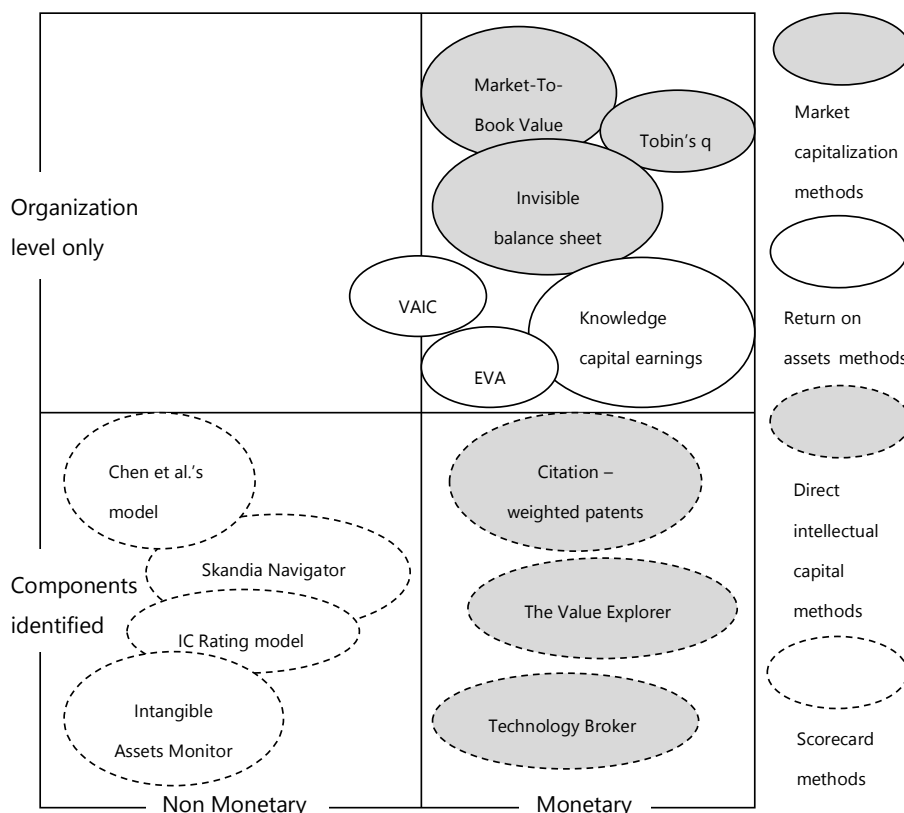


Figure 3 Overview of non-financial measurement models (adapted from Sveiby 2010)

Sveiby's categorization of the non-financial measurement models is grounded on two counter-points: non-monetary valuation versus monetary valuation and only organization level application versus components of intangible assets identified. Through these contraries, he categorizes the models into four groups:

- market capitalisation methods
- return on assets methods
- direct intellectual capital methods, and
- scorecard methods.

Examples of all these methods are presented in Figure 3. *Return on assets* and *market capitalization methods* are applied only at organization level and consider solely monetary valuation. *Market capitalization methods* calculate the difference between an organization's market capitalization and its shareholders' equity as the value of the organization's intangible assets. In turn, *return on assets methods*, as the name implies, are used to calculate average earnings from intangible assets.

Because of such calculation methods, these two approaches can be looked being developed mostly for external use (Sällebrant et al. 2007, 1473).

Direct intellectual capital methods evaluate directly the monetary value of intangible assets, either individually or as an aggregated coefficient, by identifying intangible assets' various components. *Scorecard methods*, on the other hand, specify also the different components of intangible assets but the evaluation of intangible assets combines non-monetary as well as monetary indicators, the weight being on the non-monetary indicators (Sällebrant et al. 2007, 1473). However, as Figure 3 illustrates, the weighing between the monetary and non-monetary indicators differentiate between different systems.

The scorecard methods can be considered as input systems that start action rather than systems of conclusion that stops action. Instead of being a valuation approach that stops action, the purpose of the scorecard methods is to rather provide management control and to act as a management and communication tool to improve organization's value generating capabilities (Andriessen 2004, 232; Marr et al. 2004, 560–561; Mouritsen 2004, 257; Edvinsson 1997, 372; Sveiby 1997, 163). They are therefore perceived as a good option for enabling internal use to support knowledge creation and on these basis, only scorecard methods are presented and discussed in this study. The focus will be on a pioneer model called the Intangible Assets Monitor³⁹, which is similar to the one in the case organization, whereas simultaneously some features of other scorecard methods are also referred briefly.

2.2.3.1.2 A pioneer model – the Intangible Assets Monitor

Due to the problems in measuring intangible assets, organizations tend to produce long lists of multiple indicators for non-financial measurement and by putting them together, organizations can find themselves working with a measurement system that is awkward and complex, containing possibly even invalid indicators (Bontis 2001, 58).⁴⁰ Such challenges with various indicators are seen to result in three problems: manager's increased confusion, unnecessarily complicated decision

³⁹ Skandia Navigator is perceived also as one the first non-financial measurement models (see Edvinsson 1997) and it has been used as a basis for several other models. However, because the focus of this study is on internal issues and the Skandia Navigator concentrates particularly on external ones (Bontis 2001, 47); the Intangible Assets Monitor will be discussed in detail.

⁴⁰ For instance, organizations are seen to have problems with validity and practicality of objective indicators, which may then make them managerially irrelevant (Andriesson 2005; Lönnqvist 2004). See also Mouritsen and Larsen (2005); Mouritsen, Larsen & Bukh (2005); Mouritsen, Larsen, Bukh & Johansen (2002).

making, and damaged business performance by incurring significant costs of opportunities missed (Kim & Kumar 2009, 278).

Intangible Assets Monitor is one of the pioneer models to solve such challenges in the area of non-financial measurement. It commences from an assumption that individuals are the only actors in business and it is designed particularly for knowledge-intensive organizations in which the possessed capital is based on knowledge and the business idea is to sell that knowledge (Marr et al. 2004, 560–561; Sveiby 2001b).⁴¹

The Intangible Assets Monitor is an internally focused model as it is meant to act as a management and communication tool instead of a valuation approach (Marr et al. 2004, 560–561). Following these aims, Sveiby (1997, 163–164) notes that one of the primary purposes of non-financial measurement is to provide management control (cf. Fisher 1998, 48) and due to the continuous change in the current business environment, according to him management information should emphasize flow, trends, change, and control figures (see also Chen, Zhu & Xie 2004, 201).⁴² Accordingly, rather than with the accuracy of the measurement results, Sveiby (1997) perceives that managers are more likely to be concerned with the speed in which intangible assets are being measured, which is why he recommends that non-financial measurement should ideally be repeated triannually⁴³ and include at least three measurement cycles before attempting to evaluate and compare the results.

Sveiby (1997, 164, 197) states that the Intangible Assets Monitor is in essence “a presentation format that displays a number of relevant indicators in a simple fashion”. The choice of indicators depends on the organization’s strategy and situation, while the amount of indicators for each element should be considered carefully as computing several indicators for each element is perceived to be confusing for the reader. Because of this, the report should be kept rather simple and accompanied with a number of comments. Sveiby (2001b) classifies indicators into four categories and these categories as well as examples of the indicators for them are shown in Table 1.

⁴¹ Sveiby (1989, 9–10) sees knowledge-intensive companies as organizations in which the amount of fixed capital is relatively small and production is innovative and unique problem solving.

⁴² Similar to Sveiby (1997), Chen et al. (2004, 201, 205–206) state that the main purpose of non-financial measurement is to evaluate the trend of intangible assets. On such basis, they have developed a second-generation non-financial measurement model that is based on previous models, especially on the Skandia Navigator. Following the Intangible Assets Monitor, the model tries to be also an active system that provides relevant and timely information for decision-making and emphasizes especially the innovation assets of an organization.

⁴³ Following Sveiby, Mouritsen et al. (2005, 19) state that the non-financial indicators are put in place to monitor knowledge processes in an active way. See also Mouritsen (2004, 257).

Table 1 Measurement categories and example indicators in Intangible Assets Monitor (Sveiby 2001b; 1997, 164–177)

	Structural assets	Human assets
Growth	Investment in information technology Investments in internal structure	Competence index Number of years in the profession Level of education Competence turnover
Innovation / Renewal	Organization enhancing customers Proportion of new products/services New processes implemented	Training and education costs Diversity Competence-enhancing customers
Efficiency / Utilization	Proportion of support staff Sales per support person	Value added per professional Proportion of professionals
Stability / Risk	Values/attitudes index Support staff turnover Rookie ratio	Professionals turnover Seniority Relative pay Average age

As presented in Table 1, Sveiby (2001b) divides the measurement categories into: growth, innovation/renewal, efficiency/utilization and stability/risk. These four categories are seen most important for managers to cover and the purpose of them is to provide a broad picture about the intangible assets' situation in the organization.

Before identifying the indicators for each measurement category, Sveiby (1997, 165–166, 184) suggests classifying all employee groups within one of the two categories: professional and support staff. Professionals are those who generate revenues for the organization by producing the products or solutions for clients. They are the only employees that should be considered when assessing the human assets, whereas all other employees in functions such as accounting, administration etc., contribute to the organization's internal structure and should be measured under structural assets.

In terms of the indicators, the proportion of support staff of the total number employed measures internal structure's *efficiency*, for instance. A change in the proportion indicates whether the efficiency of the structural assets is improving or not. However, it is the professionals who bring in all the revenues and therefore, value added per professional can be regarded as the 'purest' indicator of the ability to produce economic value, especially in knowledge-intensive organizations

(Sveiby 1997, 171–172, 176). Further, structural assets' *growth* perspective is concerned with investments to for instance new methods or processes. Such investments influence the internal structure of an organization and are seen as indications of a build-up of the structural assets. In turn, number of years in the profession and level of education are considered simple and useful indicators of human assets' growth (Sveiby 2001b; 1997, 168–170, 175).⁴⁴

The Intangible Assets Monitor is viewed as an efficient and simple knowledge-focused model that can be integrated into a management information system (Bontis 2001, 52; Sveiby 1997, 197). However, each non-financial measurement model is seen to have its shortcomings and strong points. Bontis (2001, 54) for instance points out that Sveiby assumes that financial outcomes are somehow related with intangible assets, and by leveraging the assets correctly, financial outcomes will follow suit (see also Marr et al. 2004, 561). Andriessen (2004, 231), in turn, has stated that the problem with non-financial measurement is that generic models have been proposed as a cure for all 'diseases'.⁴⁵ Generic indicators are criticized for the lack of 'creativity' in terms of determining the size and growth of the organization's knowledge base, for example. Most of them are seen as well fairly straightforward and not necessarily addressing the types of knowledge that produce the most value-added benefits for the organization (Liebowitz & Suen 2000, 62).

Nevertheless, it is perceived that monetary measurement of intangible assets loses important information, while non-financial measurement is seen to provide a better foundation for organizations to evaluate, compare, control, and improve them (Kujansivu et al. 2007, 182; Marr 2007, 173; Wong 2005, 270; Zhou & Fink 2003, 40; Arora 2002, 249; Bontis 2001, 43; Sveiby 1997, 163). In the end, however, it is up to the management to consider what the purpose of measuring is, what factors they want to emphasize, and for what the measurement results are used for in deciding which measurement model and indicators to apply in their organization.

2.2.3.2 Management arenas of non-financial measurement

In addition to having challenges with measurement itself, a number of organizations are seen to have practical problems in interpreting, implementing, and using

⁴⁴ For further descriptions of the indicators, see Sveiby (2001b; 1997).

⁴⁵ For additional non-financial measurement models, see for example the IC Rating system (Sällebrant et al. 2007; Jacobsen, Hofman-Bang & Nordby 2005), which is grounded on the Skandia Navigator and on the Intangible Assets Monitor.

the non-financial measurement results for better management of the possessed intangible assets (Andriesson 2005, 481; Lönnqvist 2004, 4–7). Organizations tend to have problems in understanding the non-financial reports with a list of indicators and numbers and therefore, questions like how may these indicators should be read and understood and what is the point of the indicators seem to occur (Mouritsen & Larsen 2005, 382–383; Mouritsen et al. 2005, 19; Mouritsen et al. 2002, 19, 25–26).⁴⁶

The users of the non-financial reports want to be able to understand the situation with the intangible assets via the measurement system. As the user faces similar problems to the reader of a financial statement, key questions to corporate reports are seen to help to understand the knowledge narrative of the non-financial report and the meaning of the ‘accounting numbers’ used in these reports (Mouritsen & Larsen 2005, 382–383; Mouritsen et al. 2005, 19; Mouritsen et al. 2002, 19, 25–26). Larsen, Bukh and Mouritsen (1999, 18) refer to such ‘questions’ as management arenas. They notice that indicators can be defined and connected with a set of these management arenas to the intangible scenario in order to make them relevant and through this kind of a process, the information can be then transformed into management activities (Mouritsen & Larsen 2005, 372). The key questions to corporate reports are presented in Table 2.

Table 2 Key questions to financial and non-financial corporate reports (Mouritsen & Larsen 2005, 383)

Financial reports	Non-financial reports
What are the company’s assets and liabilities?	Resources: How are the company’s knowledge resources comprised?
What are the company’s investments?	Activities: What does the company do to develop and strengthen its knowledge resources?
What is the company’s profitability?	Effects: What are the effects of the company’s knowledge resources?

These three management arenas or questions are tightly coupled, although in diverse ways in different firms (Larsen et al. 1999, 18). The first question is related to the organization’s portfolio of resources, the second to its improvement activities, and the third is concerned with the effects of the resources (Mouritsen &

⁴⁶ Cf. enabling feature of internal transparency.

Larsen 2005, 382). The indicators can be also comprised to “what is”, “what is done”, and “what happens” indicators. The “what is” addresses the question: “Do we have the right resources?”. These indicators are about making resources in the form of staff visible. Through the “what is done” indicators, the question “Do managers undertake the right qualifying activities?” is mobilised, whereas the “what happens” indicators are concerned with the broad question “Does what we do work?”. The “what is done” indicators are about making qualification activities in terms of training and process improvement visible, while the “what happens” indicators focus on making consequences in the form of employee satisfaction and ‘value added’ apparent (Larsen et al. 1999, 18).

By categorizing the indicators according to the three management arenas, it is perceived that the interpretation of the indicators can be affiliated with the knowledge ‘storyline’ of the organization (i.e. with the general development of the knowledge processes in the organization) that enables prioritizing and designing of management interventions (Dumay & Cuganesan 2011, 44). Mouritsen and Larsen (2005, 378, 383) consider this as the second wave of managing intangible assets (see also Mouritsen, Bukh & Marr 2004, 47–48), through which the management of them should be supported by the non-financial measurement in several ways.

Firstly, non-financial measurement should accentuate the management of intangible assets. This motive is based on the belief that intangible assets are not managed properly, which is why they deserve more management attention, whilst they need to be managed also differently than other resources (Andriessen 2004, 232–234). Marr (2007, 172–175) for instance considers that non-financial indicators should be used to motivate people and similar ideas have been also the driving force of non-financial measurement models like the Intangible Assets Monitor and the Skandia Navigator (Andriessen 2004, 232–234). Secondly, non-financial measurement should support the management of intangible assets by assisting in decision-making (Marr 2007, 172–175). It should help in weighing possible courses of action (trade-off decisions) as well as in monitoring effects from these actions (feedback mechanism) (Wong 2005, 270; Andriessen 2004, 232–234). This should enforce organizational learning, through which knowledge creation and sharing can be then improved (Marr 2007, 172–175; Mouritsen, Larsen & Bukh 2001, 742). An improved ability to measure and understand the key factors in the innovation process should assist managers in enhancing innovativeness of an organization as for example recognition for innovation processes can be adequately designed only if managers can measure innovation (Quintane, Casselman, Reiche & Nylund 2011, 940–941).

Non-financial measurement should be also helpful in terms of a more fundamental problem: how to link an organizations long-term strategy with its short-term actions (Andriessen 2004, 233). It is perceived to focus attention and action

to what is important, and through such processes to assist in translating business strategy into action. It can also act as a tool to ensure that efforts, investments, and resources are aligned with the strategy, which is considered important since if a gap exists between an organization's abilities and the chosen strategy, it must either invest and improve those capabilities or modify the strategy (Arora 2002, 249; Dion 2000, 36).

2.2.4 Hybrid measurement systems

2.2.4.1 Balanced scorecard – the dominant hybrid measurement system

As companies have moved from the Industrial Age to the Knowledge Age, they require new capabilities for competitive success (cf. Kaplan & Norton 1996a, 3). In the “old” economy the focus was on investing and managing physical assets. However, nowadays the ability of an organization to exploit its intangible assets has become the primary decisive factor (Bose & Thomas 2007, 653; Dittillo 2004, 401; Kaplan & Norton 1996a, 3). Management controls have to take this non-physical aspect into account and one of the responses to the criticism of traditional forms of accounting reports for (knowledge-intensive) organizations has been the development of the balanced scorecard (Bose & Thomas 2007, 655; see also Jäskeläinen & Laihonon 2013, 352).⁴⁷ Although being one of the responses, the balanced scorecard can be addressed as the dominant and most well-known framework within these hybrid solutions, which integrate financial and non-financial measurement (Chenhall & Moers 2015, 6; Marr & Schiuma 2003, 682, 685; Mooraj, Oyon & Hostettler 1999, 481; Ittner & Larcker 1998, 205, 217).⁴⁸

Most organizations' operational and management control systems are constructed around financial measures and targets. However, the emphasis that most

⁴⁷ The balanced performance measurement approach in the context of knowledge-intensive organizations is not seen to substantially differ from other organizations. It is rather considered that many performance aspects in knowledge-intensive organizations can be captured with similar measurement practices as in any organization (Jäskeläinen & Laihonon 2013, 359–360; see also Lukka & Granlund 2003).

⁴⁸ For other credited hybrid measurement frameworks (Najmi, Etebari & Emami 2012, 1141; see also Marr & Schiuma 2003), see e.g. the performance prism (Neely, Adams & Crowe 2001; Adams & Neely 2000) that instead of four as the balanced scorecard, looks at the needs of the stakeholders from five facets, namely stakeholder satisfaction, strategies, processes, capabilities, and stakeholder contribution.

companies place on short-term financial measures bears little relation to the organization's progress in achieving long-term strategic objectives (Kaplan & Norton 1996b, 75; see also Kaplan 2009). The balanced scorecard aims to contribute to reducing the problems involved in using only short-term financial measures for the purposes of control by integrating financial and non-financial measurement (Norreklit 2000, 81) and due to this non-financial perspective, it has been suggested also as one of the techniques to help in bringing forth intangible assets (Petty & Guthrie 2000, 159–160; Bontis, Dragonetti, Jacobsen & Roos 1999, 391). Managers using the balanced scorecard do not have to rely solely on short-term financial measures as the framework consists of four management perspectives that, separately and in combination, are considered to contribute to linking long-term objectives with short-term actions (Kaplan & Norton 1996b, 75).

The balanced scorecard's core consists of the organization's vision and strategy and it provides a foundation for the performance indicators, which are measured from four management perspectives: financial-, customer-, internal processes-, and learning and growth perspectives (Kaplan & Norton 1996a, 2–8). These interdependencies are illustrated in Figure 4.

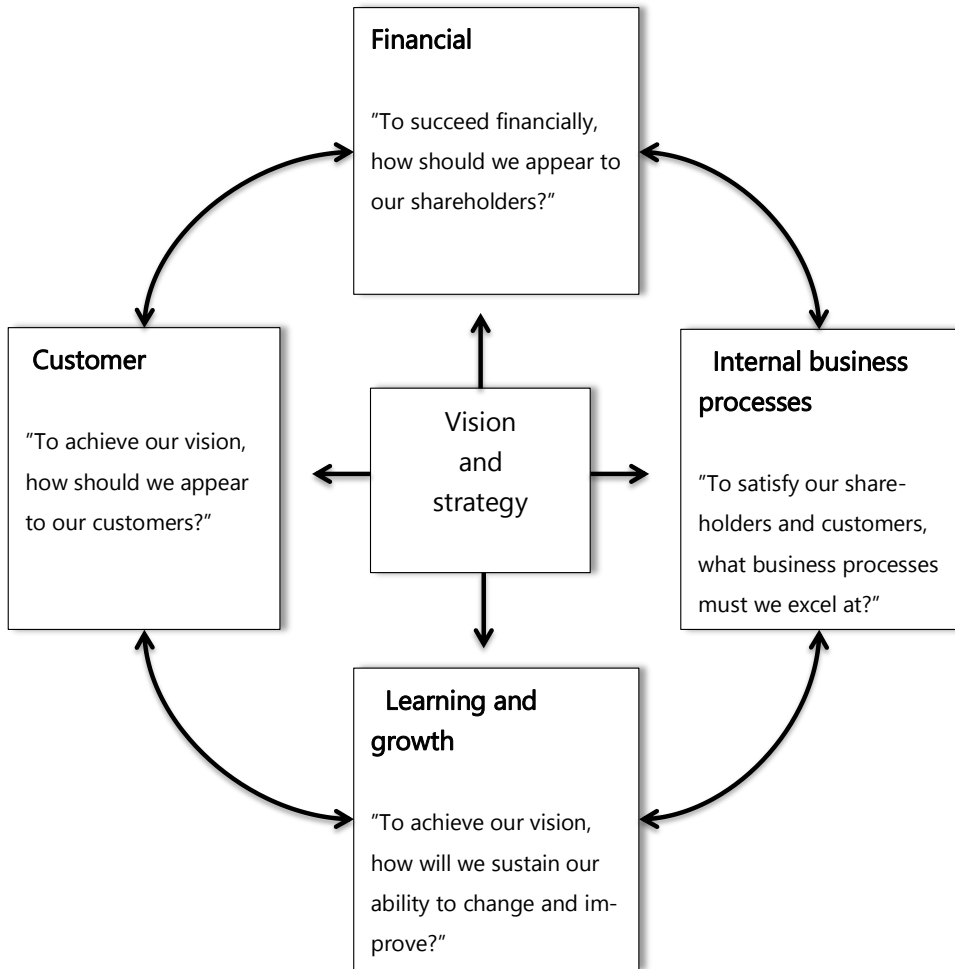


Figure 4 The four perspectives of the balanced scorecard (adapted from Kaplan & Norton 1996b, 76)

As presented in Figure 4, the balanced scorecard commences from the organization's vision and strategy, which are then translated into specific strategic objectives (Kaplan & Norton 1996a, 10).⁴⁹ The financial perspective, which defines the tangible outcomes of the strategy in financial terms, should be considered first when building the scorecard (Kaplan & Norton 2004a, 54; Kaplan & Norton 2004b, 200; Kaplan & Norton 1996a, 10). The question to be asked within the organization is: "To succeed financially, how should we appear to our shareholders?" (Kaplan & Norton 1996b, 76; Kaplan & Norton 1992, 72). Through this

⁴⁹ For linking measurement and business strategy, Kaplan and Norton (2000; 2004b) have developed a tool called strategy map. See also Kaplan & Norton (2004a).

question management should set the financial objectives and consider whether to emphasize revenue and market growth, profitability, or cash flow generation, for instance (Kaplan & Norton 1996a, 10).

Customer perspective describes “the value proposition the organization intends to use to generate sales and loyalty from the targeted customers” (Kaplan & Norton 2004a, 54; see also Kaplan & Norton 2004b, 200). Therefore, when addressing the customer perspective, the customer and market segments in which the organization decides to compete must be explicitly stated. After the financial and customer objectives are established, an organization should create the objectives and measures for its internal processes (Kaplan & Norton 1996a, 10–11). This is done by identifying the critical processes that create and deliver the shareholder satisfaction and the differentiating customer value proposition (Kaplan & Norton 2004a, 54; Kaplan & Norton 2004b, 200; Kaplan & Norton 1996b, 76; Kaplan & Norton 1992, 72). Such identification is often seen to reveal entirely new internal processes that the organization must excel in order for its strategy to be successful (Kaplan & Norton 1996a, 11).

The fourth perspective in Figure 4 – learning and growth – is concerned with a question: “To achieve our vision, how will we sustain our ability to change and improve?” (Kaplan & Norton 1996b, 76; Kaplan & Norton 1992, 72). The perspective originates from three principal sources, namely people, systems, and organizational procedures (Kaplan & Norton 1996a, 28). Through these three sources, it is perceived to identify the intangible assets that are most important to the strategy and required to support the value-creating internal processes. This linkage reveals the rationale for significant investments in reskilling employees, in information technology and systems, and in enhanced organizational procedures. The intangible assets must be integrated and aligned with the critical internal processes, through which they will generate improvement for customers and, eventually, for shareholders (Kaplan & Norton 2004a, 54; Kaplan & Norton 2004b, 200; Kaplan & Norton 1996a, 11). The objective is to create causal relationships between the perspectives that make it possible to forecast the financial results and as such, the other perspectives act as performance drivers of outcomes or supplements to the financial perspective (Mouritsen et al. 2005, 18; Norreklit 2000, 65, 68).

A well-established balanced scorecard should have a mix of outcome measures (lag indicators) and performance drivers (lead indicators). Both lead and lag indicators should be included in each of the perspectives, yielding two directional cause-and-effect chains: horizontally within the perspectives and vertically between perspectives (Norreklit 2000, 68). As the financial perspective has an interest in short-term performance and indicates primarily the accomplishments of the past, non-financial indicators are seen as the value drivers of future, long-term financial and competitive performance (Kaplan & Norton 1996a, 8).

Such assumed causal relationships in the balanced scorecard are one of the main factors that make a difference between the balanced scorecard and other models including non-financial measures. Although similarities exist between them as they both organize in equivalent manner financial and especially non-financial indicators that are coupled to the organization's strategy, the balanced scorecard indicators are seen to be causally related whereas non-financial measurement indicators are rather bundled and complementary. With the balanced scorecard the hope is to create the cause-and-effect links that make it possible to forecast the financial results, whereas non-financial measurement indicators are about monitoring knowledge activities and form a network around capabilities and their development (Mouritsen et al. 2005, 9, 15).

In addition, Mouritsen et al. (2005, 10–24) address that differences between the balanced scorecard and non-financial measurement can be seen to stem also for instance from strategy as well as from organization and management. The balanced scorecard builds on competitive strategy as it heralds markets and customers as primary elements of value production, whereas non-financial measurement orients itself towards competence-based strategy. It focuses on the internally generated value through the knowledge, skills, and know-how of the employees that have a long-time horizon. In relation to an organization, both approaches center top management but they are seen to do so with different emphases. The balanced scorecard assumes that the management can see through the organization's situation and understand the mechanism of its operations. In turn, non-financial measurement encourages local initiatives and employees are seen as an element of a system of competencies.

The balanced scorecard is considered as an (innovative) management control system (Malmi & Brown 2008, 291; Johanson, Skoog, Backlund & Almqvist 2006, 842, 852; Chenhall 2003, 132; Norreklit 2000, 81–82), which aims to be a feed-forward control system through the financial perspective's outcome measures and the performance drivers of them (other perspectives) that are linked together in cause-and-effect relationships (Norreklit 2000, 65; de Haas & Kleingeld 1999, 244). It is perceived that innovative companies can use the balanced scorecard also as a strategic management control system (Mooraj et al. 1999, 481; Kaplan & Norton 1996a, 10).⁵⁰ It should assist in communication and through the achievement of strategic alignment, in linking of the organization's different objectives (Bontis

⁵⁰ On the contrary, Norreklit (2000, 77–82) perceives that the balanced scorecard is not a valid strategic management tool. The top-down model is not seen to support the rooting of the scorecard and because of this, the implementation of the strategy through the scorecard. See also Johanson et al. (2006, 853). Cf. Malmi (2001).

et al. 1999, 398; Mooraj et al. 1999, 484). Managers' thoughts should in an enabling way be driven down into the organization through it, which should inside the organization then translate the vision of the management by clarifying the mission and long-term strategy (Mouritsen et al. 2005, 15–16; Bontis et al. 1999, 398; see also Henri 2006, 536; Chenhall 2005, 396).⁵¹

Many of the seemingly disparate elements of an organization's competitive agenda can be brought together with the balanced scorecard – into a single management report (Jääskeläinen & Laihonon 2013, 352; Mooraj et al. 1999, 484–485). Due to its comprehensiveness, the balanced scorecard is considered to support managers in business planning by managing targets, co-ordinating initiatives, and planning the budget, for instance (Bontis et al. 1999, 398). By establishing the causal connections and regular measurement of the critical factors, it may enable managers to allocate their attention to the factors that require immediate consideration and ultimately change management's understanding of the value creation process (Johanson et al. 2006, 852). Further, it is seen to provide (360 degrees) feedback and reinforce discussion and learning as it forces managers to consider all the important operational measures together (Bontis et al. 1999, 398; Mooraj et al. 1999, 486).⁵² This is perceived to also guard against sub-optimization as it is possible to evaluate whether improvement in one area may have been achieved at the expense of another (Tangen 2004, 731).

The balanced scorecard is often expected to solve many of the shortcomings associated with traditional management accounting and control practises such as abstraction, short-sightedness, monetary orientation, oversimplification, and lack of focus on intangible factors (Johanson et al. 2006, 843). However, the use the balanced scorecard is likely to have an impact on the broader management control systems package and therefore, to avoid misconclusions, it should be studied together with them (Malmi & Brown 2008, 288).⁵³ For instance, both the rolling forecasting models and the balanced scorecard are future oriented tools in which the focus is on foreseeing upcoming events as well as on reacting to such events (Järvenpää et al. 2001, 226; Kaplan & Norton 1996a, 2). They both focus on future while the emphasis areas should be different, and this is why the systems should

⁵¹ According to Malmi's (2001, 213) empirical study, the balanced scorecard is in practice seen to translate strategy into action.

⁵² Kaplan and Norton (1996a, 17–18) refer to this as double-loop learning that is stimulated by the balanced scorecard.

⁵³ In general, it is perceived that with hybrid measurement systems (e.g. with the balanced scorecard) little or no consideration is given to the existing individual measurement tools that organization may have in place (Medori & Steeple 2000, 522).

not be considered as replacing but rather complementing systems (Järvenpää et al. 2001, 226).

2.2.4.2 Perspectives on the hybrid measurement systems

Despite (and because of) the balanced scorecard's dominance, its assumptions and processes have been often challenged and criticized by many scholars in the accounting literature (see e.g. Jensen 2001c; Neely, Gregory & Platts 1995; Marr & Adams 2004; Sisodia, Sheth & Wolfe 2007).⁵⁴ Whereas Kaplan and Norton (2004a, 12–13) suppose the learning and growth perspective as a non-financial measurement system, the perspective has been considered as the balanced scorecard's weakest link, in which the related challenges have not been properly resolved (Marr & Adams 2004, 19). Kaplan and Norton can be seen to somewhat admit this in their response to "Letters to the Editor" (Harvard Business Review, May 2004) by conceding that several managers have mentioned them the perspective to be the "black hole" of their balanced scorecard.

Although the balanced scorecard will have a role to play in each of the four perspectives of the management system, often one or two of the perspectives will dominate (Mooraj et al. 1999, 484) and the learning and growth perspective is rarely the dominating or other of the dominating perspectives due to the problems experienced in establishing the perspective with meaningful indicators (Marr & Adams 2004, 19; Bontis et al. 1999, 397). This is related to the general challenge in the balanced scorecard as well as in many other hybrid measurement systems (e.g. in the performance prism) as rather than providing any measurement solutions (how to measure), they are seen to support in recognizing the measurement objects (what to measure) (Jääskeläinen & Laihonen 2013, 351). Little guidance is given for the actual selection of measures and then further for the implementation of the selected ones (Medori & Steple 2000, 522; see also Otley 2012, 250).

⁵⁴ It should be noted that at the same time, it is addressed that there is a limited amount of published contingency (something is true only under specified conditions) work on balanced scorecards (Chenhall 2003, 130, 157).

The learning and growth perspective is also perceived to underestimate employees and innovation.⁵⁵ While staff is lumped together with for instance information technology systems into the learning and growth perspective, innovation is seen as a part of the internal business process focus. Innovation is considered in the framework as a routine, something that the organization can do independently without the people. Due to these issues in the learning and growth perspective, the balanced scorecard is perceived to underestimate the specific challenge of managing people and their knowledge (Bontis et al. 1999, 397).

Norreklit (2000, 71–72) points out that the time dimension is not properly considered in the balanced scorecard. The effect of the measures will occur at different points of time because the effects of the different areas involve different time scales. For instance, while the introduction of more efficient processes may yield more satisfied customers within a short period, processes of innovation may not affect to the financial results until several years have passed. Due to such discrepancies, Norreklit (2003; 592; 2000, 72, 75–76, 82) states that the model suffers from a lack of clarity and the causality claimed to hold between perspectives is problematic. She perceives that there is not a causal but rather a logical relationship among the perspectives of the balanced scorecard. Instead of cause-and-effect relationship, the relationship between the perspectives is rather seen to be one of interdependence; customer satisfaction does not necessarily yield good financial results even though can affect it, for instance. On these grounds, the balanced scorecard is perceived to make invalid assumptions, which may lead to the anticipation of performance indicators that are flawed and possibly even in dysfunctional management and sub-optimized performance with a coercive focus (Norreklit 2003; 592; 2000, 75; de Haas & Kleingeld 1999, 244).

Furthermore, Jensen (2001c, 17–19; see also Malmi 2001) states that because managers are asked to maximize in more than one dimension at a time, they do not

⁵⁵ Because the balanced scorecard is seen to underestimate employees, other hybrid measurement models such as the performance prism includes a broader stakeholder facet. Their view of stakeholders encompasses for instance shareholders, employees, and suppliers while the balanced scorecard is perceived to encompass only shareholders and customers (Tangen 2004, 734; Neely et al. 2001, 6; Adams & Neely 2000, 20; Norreklit 2000, 78; Bontis et al. 1999, 397). However, Otley (2012, 250) states that the balanced scorecard can easily be extended to include other relevant stakeholder groups.

necessarily have a clear idea of the trade-offs between the performance indicators.⁵⁶ Such lack of understanding of the trade-offs between the several indicators may lead to situation where the manager is unable to make purposeful decisions and the result will be confusion, possibly jeopardizing the enabling use of the system. Kaplan and Norton are considered to generally disregard the critical issue of how to weight the multiple dimensions represented by the several indicators in their scorecard (Jensen 2001c, 18–19; Ittner & Larcker 1998, 229). Without specifying the trade-offs between the performance indicators, the scorecard is seen to lack the aimed “balance” and possibly take a coercive form (Adler & Chen 2011, 76; Jensen 2001c, 18–19).

Whereas the “balance” of the balanced scorecard has been questioned, certain scholars (see e.g. Jensen 2001c) do not consider it to provide a scorecard in the traditional sense of the word. In the framework of sports analogy, a scorecard in any sport yields a single number specifying the winner among all contestants. For instance, in team sports a team with highest score wins. The balanced scorecard is not seen to yield a score that would allow the users to distinguish winners from losers and therefore, the system is described by some authors rather as a dashboard than as scorecard. It is considered to tell management many interesting things about their business but lacking the ability to give a score for the company’s performance. Rather than being a system to measure the organization’s value creation, it is seen as a management control and information tool (Jensen 2001c, 18–19).

Despite the criticism, the balanced scorecard has been viewed to provide valuable insights for management accounting (see e.g. Ax & Björnenak 2004; Malmi 2001) and energised a generation of both scholars and practitioners (Neely 2005, 1274). However, it is not self-evident that individual tools for balancing are more effective means of understanding and promoting efficiency and flexibility in an enabling manner than traditional management control methods (Johanson et al. 2006, 853). The balanced scorecard can rather be seen to represent an idea and no single, uniform balanced scorecard model exists (Johanson et al. 2006, 853; Mooraj et al. 1999, 489). There are numerous balanced scorecards and the most successful enabling applications have been highly flexible, compared to the original balanced scorecard model introduced by Kaplan and Norton (1992). Its implementation can be full or partial, but the need is to extend the traditional (or financial) boundaries of management control systems and processes. There is a need to resolve problems such as abstraction, short-sightedness, monetary-orientation,

⁵⁶ Malmi (2001) found out in an empirical study that the idea of linking performance indicators following the assumed cause-and-effect relationship is not well understood by organizations. The attention was rather on each perspective, not on the cause-and-effect relationship between indicators and perspectives, resulting to a situation where each of the indicators and perspectives are fairly independent and lacking the suggested cause-and-effect logic (Malmi 2001, 217).

simplification, and lack of focus on intangible resources, and the ideas of the balanced scorecard can be helpful in overcoming these issues (Johanson et al. 2006, 852–853).

2.3 Predominantly enabling cybernetic control systems in the case organization

2.3.1 Project monitoring system

Financial measurement system is an important part of the cybernetic control package in any organization and it can be addressed in terms of its relevance for internal control as it designates to an individual (manager) the responsibility for a particular set of outputs. The case organization operates on project basis and such a model of operation places project managers in the middle of daily operations. They carry the responsibility of the project's (financial) result (case organization's project manual) and the system denoting the financial responsibility, i.e. the project monitoring system, was by the interviewees considered as a critical cybernetic control system in the organization.

It [project monitoring system] is clearly important. It is one of the most important things [control systems]. In fact, we have two things, resourcing and follow-up by which projects are pretty much directed. So, I do experience it very important. (Department manager E, interview 30.6.2016)

The results in the case organization's project monitoring system are defined in monetary terms, in respect of accounting measures such as revenues, costs, profits, and returns. The system comprises the original project budget prepared from the point of time when the project has been sold, project's budget forecast at the time of the previous reporting round, i.e. last month's project budget forecast, current project budget forecast, and the actual direct costs and revenues allocated to the project. All these different budgets (and forecasts) include the estimated revenue and (a summary of) costs at the time and through them, the gross margin of the project. By presenting these different accounting based categories, the system provides a productivity measure that express relationships between outcomes of service processes and the resources or inputs required to operate them. Costs are further allocated in detail according to certain subcategories that are in the case organization considered to be the most important to get a true overview of the project in financial terms. This should provide better visibility of internal processes for

project managers in the sense that they are in an enabling way able to see throughout the system (cf. feature of internal transparency).

The responsibilities are expressed also in terms of certain key project related operational performance indicators such as revenue per hour. The indicators are presented in monetary terms (actual figures), whereas for some of them (e.g. project gross margin) the system comprise in proportional terms the actual project figures but also the targeted ones on a company level for different work types. With such overall visibility, the system should add to the enabling feature of global transparency by connecting the project manager's actions to the company-wide context. This visibility is further supported by the presentation of overheads. They are allocated with certain allocation keys for the project in two phases, separately to 'production' and to other functions within the organization, eventually ending up to two separate results for the project; the project result and the "company" result. Due to the system's ability to provide such project and company level perspectives, the top management considered (project) managers to be better able to comprehend the up and downstream implications of their work (e.g. Director C, interview 28.6.2016), which can be seen to add to the enabling feature of global transparency.

For a financial measurement system to be internally transparent, target values for performance must be communicated to the managers in order to help them to assess their performance against historical standards. In the case organization, the project managers considered the (financial) goals of the projects to be clear for them. They perceived that the project monitoring system's original budget provides the targets on a project level, thereby increasing the internal transparency of the system.

You get the project budget calculation to your hands and see that this is the objective [in financial terms]. (Project manager C, interview 27.6.2016)

Objectives are communicated at that point when we go through the project budget. Like at the time when it [project] has been sold to the customer. (Project manager A, interview 15.6.2016)

The system includes the actual and target figures, which is why the value of the system lies in its impact on the capability to manage and monitor. It provides benchmarks for evaluating methods and tools for a more *efficient* utilization of resources and by providing these benchmarks, I suggest that from the design perspective the case organization's project monitoring system denotes apportioning of responsibility on the project manager.

Following the setting of objectives, the project monitoring system is reported on monthly basis. The technical side of the reporting is done by the financial department, but the actual input is coming from the project managers. This is done by phone, e-mails, or by going through the forecast together face-to-face with the financial department.

[Project] budget reporting [...] every quarter we go through it and see where are we at. [...] But when more happens in the project, then we sit together [with the financial department] more often. (Project manager E, interview 5.7.2016)

I argue that such a process provided project managers with information on the system's status and visibility of its internal processes, which then enabled the project managers to better understand the logic of the system. They seemed to have a good understanding of the system's internal function, or in other words, why it was in place in the case organization. Indicating about such understanding, one of the project managers noted (Project manager E, interview 5.7.2016):

I would experience it more worrying if we would not have [project financial] follow-up because then it would mean that we would not know where are we at. That is the last situation you want to be in.

Because the system provided such visibility of the project related financial elements (i.e. internal transparency), the middle management was able to repair the system in Adler and Borys' (1996) terms. They determined whether the system is operating well and through such processes could identify improvement opportunities in regard to the system and update the relevant accounting structures, which in a coercive logic of a system would not have been possible. Indicating about the enabling feature of repair, the project monitoring system was recently modified (e.g. allocation of overheads) after an initiative by the case organization's middle management. The idea was valued and deemed appropriate within the organization, after which the system was repaired accordingly.⁵⁷

⁵⁷ Due to the differences between management control systems and machine production technology used by Adler and Borys (1996), modifying the management control system by the users themselves is often not as straightforward as with machine production technology. For instance, they are used by the management for performance evaluation, whereas the financial function of the organization is typically the one responsible of the technical execution of the systems. See also Jordan and Messner (2012, 546) and Wouters and Wilderom (2008, 492).

The development ideas in relation to them [accounting based management control systems] are taken into account. We had just this one case when production and sales informed that the [project reporting] system does not work. Through that the discussion started and through which it was then modified. It started from the middle management and after we convinced the top management, things started rolling. (Department manager A, interview 21.6.2016)

Overall, the enabling feature of repair was evident within the case organization. Middle managers considered that they are able to recognize problems within the cybernetic control systems, after which they have the possibility to repair the organizational processes connected to their work and update the relevant accounting structures with the system related technical assistance from the financial department.

If I see that there is a problem in them [in management control systems], I go there [to financial department] and tell my opinion. And they do take a note of it. (Department manager B, interview 22.6.2016)

However, manufacturing oriented measures (e.g. productivity related) alone are not in the literature seen to comprehensively satisfy the managerial information needs in knowledge-intensive organizations. They cannot capture the quality variations of the services and therefore, service productivity alone is considered not to be enough, also service quality is needed in order for the measurement to properly support management actions. Although measuring the quality of service is often challenging because of the intangible aspects of services, the interviewees considered that such processes exist in the case organization.

Let us say that at least in theory we have very specific systems created for follow-up, both schedule- and hour consumption-wise but also in terms of technical quality. For each one of them there has been created own follow-up parameters and systems. (Project manager E, interview 5.7.2016)

The project managers are for instance obliged to prepare a final report about the project qualities such as schedules, quality, and hour consumption (case organization's project manual). The service quality aspect was thereby observed to be rather comprehensively covered in the case organization. Such processes with the financial report from the project monitoring system should then connect with each

other the “triplets”; service quality and service productivity, which should eventually lead to profitability.

These reports are then utilized as well as the monitoring of the projects are done on a monthly basis in so-called project management meetings. The meeting participants include project managers, department managers, and certain top managers. Different projects are followed in these meetings and through such follow-up of several projects around the organization, the interviewees considered them as occasions to receive information beyond one’s specific domain of work (e.g. a project or department) as described by one of the directors (Director E, interview 1.7.2016):

They [project management meetings] are focused like this type of distributing information type of things. [...] People come to there with a filled [project reporting] template to tell that this is where we are at.

In these meetings, the participants received a range of contextual information. This should help them to interact creatively with the broader organization and environment, and in this manner, add to the enabling feature of global transparency. To support such interaction and visibility of the overall context, in the case company all members of the organization are able to see materials related to every ongoing and past projects in the documentation system.

So we have the policy that everybody sees everything in every project; all the personnel see all the projects, all old projects. So everybody has reading rights for all the project materials. And I would see that people are employing this and it works. (Project manager A, interview 15.6.2016)

The project management meetings offered a venue for the monitoring of projects and for further actions in relation to them. Instead of implementing close monitoring of the project managers’ actions to minimize reliance on their skills, project managers considered the monitoring to be inclined more towards empowering style. Overall, such flexibility seemed to exist within the case organization. People were empowered and this came forth during every interview with department or project managers.

I definitely have the possibility to work flexibly and independently here [in the case organization]. (Project manager A, interview 15.6.2016)

It [working flexibly] has always been the strength of this firm. In some cases, it is even too flexible. (Project manager D, interview 29.6.2016)

This was then evident in the usage of the management control systems. The enabling approach allows for some flexibility in terms of how the systems are used, while the degrees of autonomy may be determined, for instance, by how strictly management enforces compliance with the system related details. In turn, the de-skilling logic results in systems that are designed to minimize reliance on users' skills and implement close monitoring of their actions. In the case organization the project managers were trusted, which enabled them to work without close monitoring. They could make own controlling decisions and instead of management to strictly enforcing compliance with the system related details, it was rather free how the project managers were expected to use the project reporting system.

It [project follow-up] remains pretty much on the project manager's shoulders. It is especially relative if we have a fixed [priced] deal. [...] if the project manager wakes up or not have been following and the finance side does not work, then it is already too late. At some point finance [department] interrupts but it [the project] is already then in a situation that quite a long time we have been going to the wrong direction. (Project manager F, interview 5.7.2016)

In the case organization, the project monitoring system permitted employees' flexibility to perform their activities, rather than was used as a coercive system to minimize reliance on user's skills. The system and the related processes also afforded visibility of internal processes and overall context for the organizational members. By doing this, it helped the members in identifying improvement opportunities, which enabled further repair efforts that were considered appropriate by the management, if the efforts were adequate. The system with its supporting documents takes also into consideration the productivity and quality aspects and because of such comprehensive measurement, endorsed by the four enabling features, the system and the related processes should according to the concept of enabling bureaucracy support employees with their tasks and with their motivational orientations.

2.3.2 Budgets

The annual budgeting cycle can in general be depicted in three straightforward steps. First the costs and revenues of the organization as a whole as well as of its

subunits are planned. After that the finance department coordinates and finalizes an organization-wide “master budget”, against which the actual results during the year can then be compared and necessary corrective actions taken. Consistent with such cycle, in the case organization the generation of the annual budget starts in autumn by planning the costs and revenues for the subunits, whilst finance department coordinates the process and eventually finalizes the “master budget”.

It [annual budget] is an important tool but to where is it based then in August-September, it is pretty much based on the past, it is sort of a rear-view mirror budget that is some sort of a thought about the development of the market. (Director B, interview 23.6.2016)

In autumn, the budget is in the case organization mainly done for performance and operational planning purposes due to its ability to weave together all the company’s disparate threats into a comprehensive plan. The budget was, however, generated in a rather mechanical manner, in which the previous year’s budget acts as a basis for the coming one (last-year-plus). This highlights one of the weaknesses of annual budgeting – its ritual nature.

You kind of get the big picture from it [from the yearly budget] but in practice it is year after year pretty much the same. (Department manager D, interview 29.6.2016)

Due to the rather mechanical process in generating the budget, the middle management felt that the budgeting cycle could be more concrete than what it is currently. This came forth for instance as one of the department managers was comparing the current way of generating the annual budget in comparison to how it was done previously in the case organization (Department manager A, interview 21.6.2016):

I participate to making of it [yearly budget] but maybe nowadays the [budgeting] process is not that tangible anymore. Previously it was really tangible and we went through the matters. The current process does not offer the overview that well anymore.

In general, the middle management nevertheless considered that they do have a participative role in the budgeting process (e.g. Department manager E, interview 30.6.2016; Department manager C, interview 23.6.2016; Department manager B, interview 22.6.2016). This is in the literature perceived to support the enabling features of internal and global transparency and although not as well as in the past, the annual budgeting process was within the interviewees considered to still give

layered access to information in the case organization, which literature addresses as the key to a successful design of internal transparency (cf. Ahrens & Chapman 2004). The process was in the organization perceived to communicate target values for performance (cf. internal transparency), while it was addressed to increase also middle managers' understanding of the company's strategy and operations (Department manager E, interview 30.6.2016; Department manager C, interview 23.6.2016; Department manager A, interview 21.6.2016). Altogether, the budgeting process was by the interviewees noted to add to the transparency of the system and to make organizational processes globally transparent.

I think it is extremely important for all the middle management that we have an understanding that how the company makes it living. In my opinion such overall image is given [to the middle management]. [...] It [the budgeting process] gives the overall image and like objectives and kind of what you should focus on. (Department manager C, interview 23.6.2016)

The annual budgeting cycle eventually results to a frame of reference. Although a great deal of "variety" can be lost in this simplification process, it was in the case organization seen to offer a mechanism for having a holistic overview of the whole organization. Instead of partitioning the tasks in a coercive way, the budget's final version was then further reviewed together in a group with the middle management. I suggest that this supported the visibility of the overall context as well as helped the managers to interact with each other (cf. global transparency), and lowered departmental barriers within the organization, for instance.

When it [yearly budget] is ready, when it is done, then we go through it more thoroughly with them [with the middle management]. (Director B, interview 23.6.2016)

After the case organization's budget preparation process in autumn, the budget is updated and reported upon the first quarter of the on-going fiscal year. At that time, the figures are based on the more flexible rolling forecasting model for which the annual budget provides a basis in the beginning of the rolling budgeting period. By offering such grounds, the annual budget was by the top management considered to be a sort of backbone of the management control process in the case organization (e.g. Director C, interview 28.6.2016; Director B, interview 23.6.2016).

In the last few years we have modified it [yearly budget] in the beginning of the year, to the first board of directors meeting, when we

see how January-February [period] has gone. (Director B, interview 23.6.2016)

In case the fixed figures resulting from the annual budgeting process are within an organization followed strictly during the fiscal year, these types of follow-up processes are in the literature considered to constrain responsiveness and to be a barrier for change, rather than to support overall organizational flexibility needed for enabling bureaucracy. The rolling forecasting models, on the other hand, are addressed as flexible, anticipatory, and active follow-up systems that enable prompt reactions to changes occurring in the operating environment. Therefore, rather than using annual budgeting for performance monitoring, it is in the literature perceived that the rolling forecasting models should be applied. However, as the rolling forecasting model is reported frequently, linking it with the agreed targets is considered to be challenging. For the rolling forecasting model to fulfil its purpose of seeing whether performance is on a trajectory to meet the previously agreed organizational objectives, literature addresses that the system should be supported with a separate goal setting system.

The case organization that operates in cyclical markets has a rolling forecasting model to complement the annual budget and vice versa. Annual budget is used principally for setting and communicating goals as well as to increase understanding of the operations (cf. internal and global transparency), while the more active and flexible rolling forecasting model is used for performance monitoring and directing the organization. This was then observed to support the flexible usage of the budgeting systems in the case organization (cf. enabling feature of flexibility).

We go through it [the rolling forecasting model] to see like how has it gone. [...] I have thought that at least we try to in that situation stick with what has been done last [i.e. with the rolling forecasting model] and not to hold on what has been agreed originally [in the original budget]. (Department manager A, interview 21.6.2016)

On the cost side we do of course live according to the latest [rolling] forecast – it is like which directs. But in terms of order intake [i.e. sales objectives] we do live according to the original budget. (Director A, interview 20.6.2016)

However, CAM-I suggests that instead of comparing performance to fixed financial targets, companies could be evaluated, for instance, as to how well its performance compares with its external peers. In the case organization, the problem with the fixed targets was also noted. One of the top managers felt that because of the fixed targets of the annual budget – that are followed at first hand through the

balanced scorecard – the case organization is too heavily connected to the fiscal year, especially when the year is approaching towards the end.

I would rather have that kind of a rolling forecast that is for a one-year period all the time. If we have the objectives for that year for example in the balanced scorecard and we see [through the rolling forecasting model] that we will reach the objective, we are very satisfied but we do not look anything what happens after the end of the year. [...] Like the feeling of satisfaction comes easily. (Director C, interview 28.6.2016)

The case organization's rolling forecasting model did have features from both the rolling budget and from the rolling forecast and as such, it could be called as a 'hybrid rolling forecasting model'. As in the rolling budget, the timeframe shortens in the case organization's version when approaching the end of the budgeting period, while the rolling forecast would cover the same timeframe as the previous forecast. The system is reported with never versions during the fiscal year but instead of setting targets as in the rolling budget, the model is rather a realistic estimation about the future according to the rolling forecast.

The follow-up of the rolling forecasting model was done for instance in so called production management meetings. The follow-up was quarterly and the meeting participants included department, top, and certain project managers. In these meetings, the rolling forecasting model was within the middle management considered to provide information beyond the meeting participants' specific domain of work and drive organizational learning through frequent monitoring of performance. By providing such overall visibility, the system supported the enabling feature of global transparency.

On quarter basis we do go through it [the rolling forecasting model] at the meetings – like where are we at. So, I think that I am quite well aware of it [of the overall situation]. We go through it to see like how has it gone. (Department manager A, interview 21.6.2016)

We do go through it [the rolling forecasting model] regularly. In production management meeting we have regular follow-up. [...] It cannot be said that you follow it [the overall situation] just for the sake of it. It comes visible in there [in the meetings] like at the same time. (Department manager E, interview 30.6.2016)

As the flexible rolling forecasting model is used for performance monitoring and directing the organization, the flexibility of the system was witnessed to pour

down to the users and into the usage of the budgeting systems (cf. enabling feature of flexibility), following the independent working climate that existed within the case organization. Such flexibility started from the parent company of the case organization (Director B, interview 23.6.2016), which was followed by the top management as they did not implement close monitoring of the middle management's actions through the budgets. Instead the usage of the system was rather flexible, and the users were able to make their own controlling decisions. Such flexibility in the application of the system was supported by the meeting observations as the rolling forecasting model was used in these meetings in a rather informative manner, which further validates the global transparency aspect of the system as it offered information beyond the participants' specific domain of tasks.

2.3.3 Non-financial measurement systems

Literature addresses that monetary measurement of intangible assets loses important information and therefore, to manage intangible assets requires the support of non-financial measurement. The importance of non-financial measurement in managing intangible assets had been recognized within the case organization. Traditional financial information alone was by the management considered to be insufficient for following the progress of the business, which is why the measurement of the intangible assets had been on the organization's agenda for several years (Case organization's Statement of human resources 2015).

However, literature addresses that measurement of intangible assets is difficult and such challenges were experienced also in the case organization. The interviewees considered the primary reasons for such challenges to be intangible assets' non-physical nature and disparity of the used measurement units. Due to the challenges with measurement, organizations often produce long lists of multiple indicators and by putting those together, organizations can end up with an awkward and overly complex measurement system. In the case organization the system was not experienced as overly complex but rather all the available information on intangible matters was welcomed by the management.

I do not believe that we have too many reports. It [personnel] is just the most difficult to measure, like to quantify in any way. In that way there cannot be too much reports. All the information that we get from people is valuable. It is, like you know, the most difficult perspective to measure, like how are we doing in terms of resources. (Director B, interview 23.6.2016)

For solely non-financial measurement, the case organization is currently conducting a report called 'Statement of human resources'. The stated reason for the report was "to complement the financial information and to give a closer look at the state and development of the human resources" (Case organization's Statement of human resources 2015). The report has three primary measurement categories: number and age profile of the personnel, education and development, and workplace well-being. The Statement of human resources represented the principal non-financial measurement system in the organization but to complement it and vice versa, the human resource function carries out further measurement by extending the balanced scorecard's learning and growth perspective with few additional indicators (referred as HR balanced scorecard).

The measurement results from these systems should be utilized in managing organizational resources. However, literature addresses that problems in understanding the non-financial reports often tend to occur in organizations (cf. internal transparency). Managers are not always in an enabling way able to see throughout and understand the logic of a system and questions like "how may these indicators be read and understood" and "what is the point of the indicators" seem to arise. For interpreting the measurement results the three tightly coupled management arenas defined by Larsen et al. (1999) provide valuable considerations as they together constitute the 'storyline' of an organization's intangible assets. Management interventions should be made possible through the apprehension of the 'storyline', eventually resulting to enhanced management of the assets. Table 3 presents case organization's non-financial indicators according to these management arenas while simultaneously reflecting them through Sveiby's measurement categorization. Indicators from the Statement of human resources are marked with brackets.

Table 3 Case organization's non-financial measurement indicators according to management arenas

	<u>What is</u>	<u>What is done</u>	<u>What happens</u>
	Statistical information	Internal key indicators	Effect indicators
Growth	<ul style="list-style-type: none"> - (Level of education) - Competence index [demographics] 	<ul style="list-style-type: none"> - Education hours and costs 	<ul style="list-style-type: none"> - Competence index - (Development discussions)
Innovation / Renewal	<ul style="list-style-type: none"> - (Average ages by departments) - (Organization's age profile) 	<ul style="list-style-type: none"> - Number of master / bachelor theses initiated year-to-date - Academy contacts - (Amount of man years done by subcontractors) - (Number of trainees during the year) - (Development hours and costs) 	
Stability / Risk	<ul style="list-style-type: none"> - (Number of employees in the organization) - (Amount of lay-offs) - (Number of persons reaching retirement age per coming year) 	<ul style="list-style-type: none"> - Completion of actions based on the work satisfaction inquiry - (Investments in well-being) - Departure interviews 	<ul style="list-style-type: none"> - (Hired and resigned during the year) - (Sick leave percentage) - Length of the employments - (Amount of overtime hours per year) - (Sick leave costs) - (Length of the employments)

Despite the experienced challenges in measuring the intangible assets, I suggest that the non-financial measurement in the case organization currently covers the categories of the Intangible Assets Monitor as well as the different aspects of the

'storyline' within these categories.⁵⁸ From Sveiby's four original categories, only the indicators from the efficiency and utilization perspective are missing. However, I argue this to be rational as other systems in the case organization's cybernetic control package can be seen to cover the issues related to the perspective. For instance, utilisation rate -indicator in the case organization's balanced scorecard (see next chapter) that measures the utilization rates of different departments is a rather perfect fit for this category. In turn, the stability and risk perspective as presented in Table 3 is thoroughly measured. This focus can be explained with the intangible assets related (future) risks that the case organization is confronting due to the approaching retirement of the baby boom generation.

In terms of the (growth perspective) indicators' 'storyline', for instance the 'level of education' -indicator provide statistical information and address the question: "Do we have the right resources?". This is then followed by the efforts put in training and education (education costs and hours, i.e. what is done -indicator), which should eventually have an effect on the increase of competence index (what happens -indicator). Such connections demonstrate the value of the 'storyline' of intangible assets as well as the strong relationship of the management arenas, through which the 'accounting numbers' used in the report can then have a meaning.

By referring to Table 3, it is suggested that the case organization's current non-financial indicators cover the three aspects of the 'storyline' in each of the categories except in innovation and renewal's effect indicators. However, indicating about the complementary relationship between the systems, the balanced scorecard's 'three-month results of development projects after completion' -indicator directly recognizes this perspective missing from the non-financial measurement system (see next chapter). Concurrently, in addition to the stability aspect, the amount of hired personnel (hired and resigned during the year -indicator) can be perceived to indicate also about the renewal of the organization through new employees (e.g. trainees hired after the training period). On these basis, the system should enable correct conclusions for further actions from the measurement results.

⁵⁸ Categorization of the indicators was done by the researcher and can be considered to be always somewhat perspective dependant. Whereas for example 'development costs' can be addressed as a direct innovation/renewal indicator, some indicators are not necessarily that straightforward. For instance, indicators such as 'organization's age profile', 'amount of man years done by subcontractors', and 'number of trainees during the year' offer information about different and external viewpoints within the organization. They can be thereby seen to indicate also about renewal/innovation, although not perhaps as directly as the 'development costs' -indicator.

Sveiby suggests some of the indicators presented in Table 3. The entire layout of the Human resource statement report does also resemble to certain extent Sveiby's Intangible Assets Monitor – a system that is designed particularly for knowledge-intensive organizations. Consistent with Sveiby's ideas, in the system the categories are followed by a number of comments while the full statement is complemented with an 'executive summary', making the understanding of the logic and interpretation of the system and its results easier (cf. internal transparency). Overall, the system could be seen to be an internally focused model that is meant to act as a management and communication tool instead of a valuation approach.

The key to a successful design of internal transparency is in the literature considered to lie in giving (layered) access to information (cf. Ahrens & Chapman 2004). Consistent with such access to the information of the Statement of human resources, in the case organization the results of the report are published in the intranet of the company, emphasized there in the front-page news, and whenever accessible to the entire organization. While the Statement of human resources is conducted on annual basis, the indicators in the HR balanced scorecard are measured either quarterly or once a year, and on corporate or department level. After the yearly reporting cycle, the Statement of human resources is gone through in different meetings between top and middle management, such as in the production management team meeting.

We go it [Statement of human resources] through at production management team meeting at some point. It is in a way an important report. We utilize it in a way that we know how much we have experienced employees and so on. (Department manager D, interview 29.6.2016)

Due to the rather infrequent⁵⁹ measurement of the indicators of the Statement of human resources, management did not implement close monitoring of middle management's actions through the system. I interpret that this added to the enabling feature of flexibility that generally seemed to exist within the case organization. Middle management was during the year also able to run via the reporting system some of the non-financial measurement indicators by themselves, which

⁵⁹ Due to today's fast changing business environment and intangible assets constant evolvement in practice, Sveiby recommends that measurement should be performed triannually. However, in the case organization the quarterly/yearly measurement cycle was considered to be sufficient because of the perceived stable nature of the measured matters (e.g. Department manager F, interview 4.7.2016).

does not suggest that management would fear the opportunism of their subordinates. It rather indicates that they value their subordinates' potential contribution in identifying opportunities for improvement and in dealing with unexpected defects. I suggest that this denotes about the existence of enabling feature of repair in the case organization.

The Statement of human resources has been conducted in the case organization since year 2009. With this historical data available, the interviewees considered that the system enables the evaluation and comparison of the results and accomplishes the main purpose of several non-financial measurement systems; it enabled the evaluation of the trends and emphasized changes and flow of the case organization's intangible assets.

It [human resource statement] is pretty important. Now as it is done regularly, it tells to which direction the personnel matters are developing. (Director B, interview 23.6.2016)

Overall, the non-financial measurement was considered to function fairly well in the case organization. In the middle management it was perceived to provide visibility of the overall context and a range of contextual information beyond one's specific domain of work. This was achieved by offering employees information about different departments and age groups within the organization, for instance. The system thereby supported the enabling feature of global transparency, while several interviewees (e.g. Department manager F, interview 4.7.2016; Director B, interview 23.6.2016) perceived that such visibility of the staff matters (what is and what happens –aspects) is further bolstered by the comprehensive organization-wide personnel inquiry that the case organization conducts every second year.

You get from it [human resource statement] a cut through from the personnel's different distributions, age, knowledge level and this type of things. Like a general view from the personnel. Then in addition we added the comparison figures, so we see to which direction are we developing. (Director C, interview 28.6.2016)

On the basis of above, the non-financial measurement system was discovered to measure intangible assets of the case organization in a rather comprehensive way. The interviewees considered it as a control tool that acts as an informative follow-up mechanism for different managerial actions. The system provided transparency on the intangible assets and emphasized the related trends and changes, while at the same time it enabled decision making as well as identifying improvement opportunities in terms of the intangible matters (cf. enabling features of flexibility and repair).

2.3.4 *Hybrid measurement system*

The emphasis that most companies place on short-term financial measures bears a little relation to the organization's progress in achieving long-term strategic objectives. To overcome such problems of monetary-orientation, short-sightedness, and lack of focus on intangible resources, organizations need to extend the traditional boundaries of management control systems. In the case organization, the ideas of the balanced scorecard were considered helpful in extending these boundaries. The four management perspectives of the framework were seen to contribute to linking long-term objectives with short-term actions and the perceived value of such linkages acted as a starting point for implementing the balanced scorecard in the company.

The balanced scorecard was kind of a hit product. [...] So we thought it in a group that it would make sense that we think about also other things then just if we make profit or not. That there are things that change today and thereby can really affect what is the profit tomorrow [in future]. (Department manager F, interview 4.7.2016)

The case organization's balanced scorecard was created as a result of workshops. Consultants supported the participants in the creation of the system and during these workshops, participated by the top and department managers, the original idea of the balanced scorecard was discussed. There, however, are numerous balanced scorecards and in comparison to the original balanced scorecard model introduced by Kaplan and Norton (1992), the most successful applications have been highly flexible. The case organization's version did not either unconditionally follow the original scorecard but was rather a version specifically designed for the case organization with own performance indicators (cf. the strategy map) and for a certain purpose.

We took all the four perspectives [of the balanced scorecard]. But we developed own indicators for them and also in a way that we wanted that it becomes such type that at the same time we can use it to measure efficiency and that it is not only like for placing goals. So we did it in a bit different way. It does not fully reflect the traditional balanced scorecard, in some parts it does but not in every way. (Director C, interview 28.6.2016)

The performance indicators in the case organization's balanced are measured from four management perspectives: economy and growth-, customers-, internal processes-, and learning and renewal. These performance indicators are presented

in Table 4 and in the actual system they are accompanied with target figures, either on cumulative/monthly or one-off basis, depending on the indicator in question. I argue that such objectives as well as the participative creation process of the system supported the enabling feature of internal transparency. By accompanying the performance indicators with target figures managers should be able to assess their performance against historical standards, while participation in the creation process should help the involved persons to see throughout and understand the logic of the system as well as to provide understanding why the system is in place.

Table 4 Performance indicators in the case organization's balanced scorecard

	Lag indicators	Lead indicators
Financial	Revenue Actual hour price Operating margin Overdue accounts receivables	Order intake
Customer	Ordered work per different work types and customer groups Allocation of own capacity to different work types	Number of sent quotations
Internal processes	Percentage of quality deviations settled Three-month results of development projects after completion Overhead salaries Utilisation rate of different departments	Percentage of project and action plan audits
Learning & growth	Development discussion completed Competence index	Academy contacts Theses works initiated

The balanced scorecard aims to be a feed-forward control system through the financial perspective's outcome measures and the performance drivers of them

(other perspectives) that are linked together in cause-and-effect relationships. To achieve such feed-forward composition, a well-established balanced scorecard should have a mix of outcome measures (lag indicators) and performance drivers (lead indicators). Whereas Table 4 presents the balanced scorecard's performance indicators within each of the four perspectives, it indicates that the case organization's version covers such a mix of lag and lead indicators as well.⁶⁰ It can be considered to yield two directional cause-and-effect chains: horizontally within the perspectives and vertically between perspectives.⁶¹ This should then make it possible to some extent forecast the financial results and performance of the company.

Supporting the existence of cause-and-effect relationships between the performance indicators, the interviewees perceived the case company's balanced scorecard as a feed-forward control system, in which other perspectives are supplements to the financial perspective. The idea of linking indicators with the cause-and-effect relationships was rather well understood within the case organization, which supports the idea that the managers are in an enabling way able to understand the logic of the system (cf. enabling feature of internal transparency). With the two-directional cause-and-effect chains, the balanced scorecard was in the case organization seen to enable the forecasting of financial outcomes. This came for instance apparent as one of the department managers was discussing about the existing balance in the case organization's balanced scorecard (Department manager F, interview 4.7.2016):

In a certain way they [the balanced scorecard indicators] are [in balance]. Of course often the financial indicators have a bigger role but if we think about the leading indicators, in that way it reflects [the business] well and based on that we can assume what will happen.

Although the balanced scorecard had a role to play in each of the four perspectives in the case organization, some of the interviewees perceived that the multiple dimensions in the scorecard are not weighted equally. Literature addresses it to be common that one or two of the perspectives dominate, while the learning and

⁶⁰ The distinction was done by the researcher.

⁶¹ For instance, in the customer perspective, number of sent quotations (lead indicator) should indicate (but not ensure) about the amount of ordered work in future (lag indicator) and eventually about the revenue of the company (lag indicator). Furthermore, project and action plan audits (lead indicator) should sustain and/or increase the quality of internal processes. Improvement in this indicator should eventually lead to for instance better order intake (lead indicator) due to better quality of work, and in the end to better utilisation rate of different departments (lag indicator) because of the improved workload situation (through better order intake).

growth perspective is rarely the dominating one. Similar accounts were also observed with the case organization's balanced scorecard. A possible reason for this might be that whereas the system is reported regularly on monthly basis, some of the performance indicators, especially the indicators in the learning and renewal perspective, are measured only quarterly (one indicator yearly).

In the case organization, other measurement tools had been considered along with the balanced scorecard. One such system is, for instance, the complementary non-financial measurement system, which provided more detailed information on the scorecard's learning and growth perspective. The non-financial measurement system, however, was reported yearly and this rather infrequent measurement cycle might further explain why some of the interviewees saw the focus on the balanced scorecard to be more on the financial matters. Hence, rather than the learning and growth perspective being the "black hole" of the case organization's balanced scorecard, the issue could be more related to the measurement frequency of the perspective in comparison to the financial and other aspects.

The balanced scorecard was reported monthly in the case organization and followed in different meetings between top and middle management. Instead of being a system to measure case organization's value creation, the aim of the balanced scorecard was rather to be a management control and communication tool that through the four perspectives covers financial but also non-financial matters. One of the directors discussed about the purpose of the system in the following manner (Director C, interview 28.6.2016):

We have tried to find such forms in which you can combine financial and technical measurement in a way that in top management there would be as good as possible image that how projects are going technically and in middle management there would be understanding how projects and company are doing in financial terms. This kind of cross, cross engaging and then that we would have common tools to deliver the message. It is clear that those who operate more with financial indicators, can read them and then those who operate with technical indicators can read them. But there need to be like something that connects them and here [in the case company] it is this our balanced scorecard. [...] With it we have aimed only at delivering the message clearly as possible and in same form throughout the organization as widely as possible, so that the individuals who affect and can affect to the efficiency of the operations and to the success of the organization, would know where are we at and where are the important points and which things are going well and which not that well.

The balanced scorecard's purpose in the case organization was to provide managers visibility of the overall context in which they perform their specific duties and thereby to help them to comprehend the up- and downstream implications of their work (cf. enabling feature of global transparency). At the same time, in order to reach these objectives, the interviewees considered it important that the system is clear enough for everybody to understand it. Such clarity in regards the system came forth during the interviews (cf. enabling feature of internal transparency).

It [the balanced scorecard] is naturally easy to scroll through in there [in meetings] as everybody knows the agreed [performance] indicators and you do not need to explain them. [...] It is a good tool. It is like the pulse of the firm. (Director A, interview 20.6.2016)

Despite the focus being somewhat more on the financial performance indicators, the scorecard with its transparency was considered to reduce the problems involved in using only financial measures for control purposes. Interviewees perceived that it brings together, into a single management report, many of the distinct elements that are important in order for the managers to understand the organization's overall situation.

It [the balanced scorecard] draws the picture about the [entire] business. You can well smell where are we at. (Department manager F, interview 4.7.2016)

Instead of partitioning the information according to coercive approach, the managers considered that by providing them with a range of contextual information, the case organization's balanced scorecard helped them to interact creatively with the broader organization but also with the wider (external) environment such as subcontractors and customers, thereby indicating about the system's enabling feature of global transparency.

Consistent with the system's ability to provide visibility of the organizational context, the middle management discussed the balanced scorecard to have more of an informative than a controlling role in the organization.

It [the balanced scorecard] has more like an informative role in these meetings. (Department manager A, interview 21.6.2016)

It [the balanced scorecard] is enlightening. It has more of an informative role and for me it tells where are we at – it gives kind of a general view. (Department manager D, interview 29.6.2016)

Such informative role was also observed in the meetings to which I participated. Instead of strict enforcement of compliance with the system related details, the system was more about distributing information and to ‘deliver the message’ throughout the organization in order to increase managers’ understanding of the organization’s operations. The usage of the system was not about close monitoring of employees but it rather allowed flexibility and autonomy for managers to make their own controlling decisions (cf. enabling feature of flexibility).⁶²

While such flexibility supported the middle managers’ repair efforts of organizational processes in relation to their functions, the interviewees noted that the transparency of the system enables managers to determine whether the processes are operating well. By providing understanding of the overall context through the establishment of the cause-and-effect connections of the critical factors, the balanced scorecard was discussed to allocate managers attention to the factors that require immediate consideration. This helped them then to identify opportunities of improvement.

It [the balanced scorecard] serves as that kind of an aggregate, you get the big picture. Sometimes you get kind of a wakeup call that damn – are we going to that direction? (Director D, interview 30.6.2016)

It [the balanced scorecard] causes that when it is going bad, that now we need to find some work somewhere. In a way like people wakes up due to it. (Department manager B, interview 22.6.2016)

After determining the functioning of the process and identifying the related improvement opportunities, the repair of the related organizational processes was observed to be appropriate in the case organization. While such initiatives would not be welcomed in a coercive approach, the case organization’s top management was rather acting according to the enabling approach. For instance, one of the top managers noted (Director B, interview 23.6.2016):

If we do not act according to the process description, then we change the process description to correspond with the practice if the practice is good.

Overall, the balanced scorecard was in the case organization used and experienced as an information and communication tool that offered targets to focus on

⁶² Some interviewees considered that department managers do sometimes have even too much possibilities to make their own controlling decisions (e.g. Project manager D, interview 29.6.2016).

and an overview of the entire situation. These processes then supported the enabling features of internal and global transparency. Following the informative role, close monitoring of managers' actions was not implemented through the system, but it was rather designed to empower them and to help them to make better decisions. Furthermore, because of the transparency of the balanced scorecard, it was also noticed to help managers to determine whether the processes were operating well, and thereby offered possibilities to repair them.

2.3.5 Cybernetic control package

Figure 5 portrays the different cybernetic control systems in the case organization and presents the yearly measurement/control cycle of these systems.

Q1			Q2			Q3			Q4		
PMS	PMS	PMS	PMS	PMS	PMS	PMS	PMS	PMS	PMS	PMS	PMS
RM	RM	RM	RM	RM	RM	RM	RM	RM	RM	RM	RM
BSC	BSC	BSC	BSC	BSC	BSC	BSC	BSC	BSC	BSC	BSC	BSC
		HR BSC (partly)			HR BSC (partly)			HR BSC (partly)			HR BSC (full)
		SHR									
	AB update							AB process			
		2. Ap- proval of AB/RM at BoD								1. Ap- proval of AB at BoD	

Figure 5 Case organization's rolling planning and control process (model adapted from Järvenpää et al. 2001, 227)

As presented in Figure 5, Project monitoring system (PMS in Figure 5), rolling forecasting model (RM), and balanced scorecard (BSC) are reported monthly, whereas the human resource function's scorecard (HR BSC), i.e. the learning and renewal perspective of the balanced scorecard with few additional indicators, is reported mainly on quarterly basis (some indicators at the end of the fiscal year). Statement of human resources (SHR) is revised and the results published yearly after the end of calendar year, usually in the latter part of the first quarter (Q1).

The final annual budget (AB), based on the rolling budget at the time, is approved at the Board of Directors meeting at the end of the first quarter whilst the annual budgeting process, resulting to the first version of the annual budget for the coming year, starts usually around the end of the third quarter (Q3) and continues sometime during the fourth quarter (Q4).

When one control system may act as a complement or substitute for another control, i.e. they act collectively, literature addresses that consideration of the joint effects of these controls is necessary. On the contrary, elements of a control package may be studied individually if the systematic relationship between the systems is missing that could cause some misunderstanding of the joint effects of these practices. In terms of these relationships, in the case organization annual budgeting provides the foundation for the rolling forecasting model, targets to the balanced scorecard, and organizational level goals as well as allocation keys for the 'production' and 'other functions' overheads for the project monitoring system. In turn, the rolling forecasting model complements annual budgeting on the 'second' budgeting round as well as acts as a detailed monitoring tool for it during the fiscal year. Concurrently, the non-financial measurement system complements the balanced scorecard with the non-financial/learning and renewal indicators, whereas the balanced scorecard complements the non-financial measurement with the specific efficiency and utilization indicators.

As the case organization operates on project basis, the project monitoring system year-to-date figures do naturally come together in the rolling forecasting model as well in the balanced scorecard in terms of turnover, for instance. The project monitoring system can therefore offer detailed information for both of these systems. In addition, the project monitoring system complements the rolling forecasting model by providing revenue estimates to its forecast (i.e. the order backlog). Further, both the rolling forecasting model and the balanced scorecard are future oriented tools. They have different emphasis, but the focus is on foreseeing future events as well as on reacting to such events. They should not be therefore considered as replacing but rather complementing systems and based on the interviews and observation in the meetings, this complementary relationship between them could be witnessed in the case organization.

We always go through it [balanced scorecard] in there [in the meetings]. We do often also look other more detailed supporting data [i.e. the rolling forecasting model] but I always do start from it when preparing to a meeting. It gives you quick overview of the situation and at least in this organization, it tells where are we at. (Director B, interview 23.6.2016)

In the case organization, while the balanced scorecard with its different perspectives offers distinct and diverse (non-financial) viewpoints on how the year-to-date financial results in the rolling forecasting model are achieved, the rolling forecasting model provides detailed and fundamental information on how to come up with some of the specific summary indicators of the balanced scorecard. The balanced scorecard, however, was always the first cybernetic control system to be reviewed in the observed meetings between top and middle management and in case if it was considered necessary, the rolling forecasting model was used as a supporting system for further organization level details.

As a result, it can be stated that there is a systematic relationship between these cybernetic management control systems in the case organization. Whereas the project monitoring is used as the system to monitor and evaluate projects, the balanced scorecard was the principal system for monitoring and evaluation on an organizational level. Goals placed with the annual budget were primarily followed through the balanced scorecard while the rolling forecasting model and the Statement of human resources complemented it. Due to these existing processes of evaluation, evaluation processes will be in the remaining of this study addressed by considering these two project- and organization level systems; the project monitoring system and the balanced scorecard.

The yearly cycle of the entire cybernetic control package as well as the monthly reporting of the project monitoring system, the rolling forecasting model, and the balanced scorecard should offer a comprehensive management framework for the case organization's managers. While the top management considered that financial control systems provide a relatively easy and standardized way for them to monitor the results of a variety of operational initiatives, they were also perceived to be well complemented by the non-financial aspects of operations.

Financial tools in my opinion are in place and work well. Like in terms of the entire group and [case] company, the financial systems are proper, and also project follow-up. But also like technical abilities [i.e. competencies], like abilities are also followed. So, we measure many layers. (Director B, interview 23.6.2016)

Overall, the general feeling within the case organization's top management was that the management control systems are functioning well and that through them they can get the required information to lead the organization.

In practice I do get all the information what I need, either directly from the systems or by asking. In practice you do know everything what is happening here. (Director C, interview 28.6.2016)

We have a lot of tools [management control systems] depending what work, what management work you are doing. And in my opinion, they are pretty good. We would not cope without them. (Director D, interview 30.6.2016)

Such holistic management framework should support strategic learning, communication, and discussion, and to make it possible for the managers to practice adequate and future oriented active management control. The top management perceived that the case organization's cybernetic control package does currently allow such initiatives. It was considered to provide the necessary information without being too complex, while one of the directors noted that even with less comprehensive package such initiatives to direct and lead the company could be feasible (Director C, interview 28.6.2016):

I am not so convinced if we need all that data what we have in order to direct this business, maybe it could be simplified even more.

These insights can be seen to support Lukka and Granlund's (2003) proposition that technically there is no need to invent new tools for management control in knowledge-intensive organizations. Consistent with Lukka and Granlund's (2003) suggestion, the case organization's management felt that the current cybernetic control systems were technically adequate and through these systems, they had the necessary information to practice active leadership within the organization.

2.3.6 Summarizing the enabling features of the cybernetic control package

Adler and Borys (1996) address that for organizations to achieve enabling bureaucracy, they should avoid forces encouraging coercive logic, while certain other forces advancing the enabling logic should be promoted. In a way that they endorse achieving the enabling bureaucracy, many of these forces could be recognized to exist or be absent in the case organization.

One force that organizations should avoid is the absence of reality checks, which is considered as an important prerequisite for companies to maintain adaptability in today's fast changing business environment. Absence of reality checks is concerned with external stimulus (e.g. demanding customers or competitive rivalry) for improvement and the interviewees perceived that such type of external stimulus exists in the case organization. Because of the targeted and acknowledged trendsetter position in the industry (e.g. Director D, interview 30.6.2016), such stimulus was considered to be evident rather through customers than from competitive rivalry.

We are not cheap and therefore, in many cases standard performance is not enough from us. They [customers] expect something else from us and this this something else is innovative solutions. (Department manager C, interview 23.6.2016)

Pressure comes always from outside [from a customer e.g. a shipyard or the owner of the vessel]. (Project manager C, interview 27.6.2016)

Another force to be avoided in order to achieve enabling bureaucracy is asymmetries of power. In a company, it refers to empowering employees by decentralizing the organization. Whereas asymmetries of power is a force to be avoided, automation is a force encouraging the enabling logic. It, however, is similar with asymmetries of power in the sense that through it employees should be also empowered. Automation is seen to encourage organizations to design jobs that require more skills and discretion and these qualities of job 'independence' should then expedite organizations to implement work procedures that empower employees. Further, participative design processes – another force encouraging the enabling logic – are seen as less-coercive oriented because in environments characterized by such processes, participants acknowledge their right to participate in the dialogue as autonomous and equal partners.

By both top and middle managers, the case company was seen to have a low organization hierarchy. Middle management felt themselves empowered as well as autonomous and equal partners with the top management, while they were also involved in different processes (e.g. in the annual budgeting process) and development activities (e.g. the development of the balanced scorecard). With such organizational characteristics, the coercion logic should not appear as inevitable nor, on the other hand, the enabling logic as utopian and naïve.

We have very low organization hierarchy for a company of this size. (Director C, interview 28.6.2016)

This organization, would I say, is not hierarchic. It is like this kind of an expert organization in which many do experience being equal in certain ways. It is not like that somebody would run over you, like that somebody would run over you with his/her own opinions because he/she is higher in the hierarchy. So, I would say that we have a kind of a participative atmosphere. (Project manager B, interview 16.6.2016)

Overall, many of these forces to be either avoided or encouraged were recognized to support achieving enabling bureaucracy in the case organization. Correspondingly, all of the four features of the theory of enabling bureaucracy could more or less be identified to exist within the organization's cybernetic control processes. First of all, cybernetic controls were transparent in the case organization. In fact, the interviewees considered that in order for department managers to properly take care of their task of project resourcing responsibility, it is rather compulsory for them to have the visibility of the overall context (cf. global transparency). Such visibility was for example required to interact creatively with other department managers as well with the project managers to staff the projects in the most optimal way.

We have resourcing responsibility so in a way you need to have like a feeling where are we at and what still needs to be sold. (Department manager E, interview 30.6.2016)

While the systems were informative and provided a range of contextual information, middle management had discretion over the use of control systems. The feature of flexibility came clearly forth within the case organization during the interviews and the control system design was no different. The systems were not designed to implement close monitoring of middle management's actions but rather for the users to make their own controlling decisions based on the information provided by the systems.

Things need to be controlled but I would not say it is over controlling here [in the case organization]. [...] I would say it is rather flexible here. (Project manager B, interview 16.6.2016)

That is the good part in this [in working in the case organization]. Very, very flexible you are able to work. (Department manager D, interview 29.6.2016)

As the systems were to rely on managers' skills, they were given information about the systems' status. The middle management was in general able to understand the logic of the systems and why they were in place (cf. internal transparency). With such transparency in terms of the systems, managers were able to identify opportunities for improvement, which made it possible to repair organizational work processes and to further update the relevant accounting structures with systems related technical assistance from the finance department (cf. enabling feature of repair).

Financial department do listen our desires regarding for example reporting tools, what we get out from there. I have experienced that you do get things through, like what you do desire [from the systems]. (Department manager E, interview 30.6.2016)

If such initiatives were deemed appropriate, the systems were repaired like in the case of the project monitoring system, for instance. This possibility for repair denotes that in the case organization the top management valued middle management's contribution in determining whether the processes are operating well rather than feared their opportunism.

If we do not act according to the process description, then we change the process description to correspond with the practice if the practice is good. (Director B, interview 23.6.2016)

Prior studies of the concept of enabling bureaucracy (Wouters & Wilderom 2008; Ahrens & Chapman 2004; see also Mundy 2010) have addressed that managers have a natural tendency to use management control systems coercively. In the case organization, however, such overcontrol that can be fatal for knowledge-intensive companies could not be witnessed. On the contrary, the four features of the theory of enabling bureaucracy came forth with the cybernetic control processes. Management gave employees autonomy in performing their activities rather than coercively reduced reliance on their skills through these systems, for instance.

Further, coercive formalization is in the literature addressed as a substitute for employee commitment. Supporting the argument about the absence of coercive formalization in the case organization, or rather the existence of Adler and Borys' (1996) enabling formalization, the middle management was according to the recent personnel survey committed to the case company (Case organization's personnel survey 2016). These findings indicate that Adler and Borys' (1996) enabling bureaucracy with its four specific features existed within the case organization's cybernetic control package. Such package of systems and the related processes should thereby, according to Adler & Borys (1996; see also Adler & Chen 2011), be perceived positively by the employees, support them in their fulfilment of their tasks, and support their motivational orientations and subsequent activities of innovation. I will next turn to these processes of innovation in detail in order to understand their nature and through such approach, how management control systems could help to initiate and motivate these efforts.

3 UNDERSTANDING INNOVATION

3.1 Explaining innovation – the knowledge spiral

In order to explain innovation, Nonaka and Takeuchi (1995, 56, 61) consider that a model of organizational knowledge creation is needed. The model is referred as the SECI-model (socialization, externalization, combination, and internalisation) and it represents an activity-stage model as it identifies particular activities that are performed during innovation.⁶³ Most innovation theorists perceive such stage approaches useful in clarifying the various variables operating on innovation, which is why they can have great heuristic value; for both theory and practice (Amabile 1988, 158).

The SECI-model is grounded on one of the well-known distinctions between the characteristics of knowledge; explicit and tacit (Nonaka 1994, 16). An iceberg metaphor has been used to describe the distinction between explicit and tacit knowledge. Explicit knowledge is the visible top of the iceberg. It can be formalised, represented and articulated, as well as it can be easily stored, retrieved, shared, and disseminated within organizations. Tacit knowledge, in turn, is the hidden part of the iceberg, the part that is beneath the surface. Tacit knowledge includes factors such as intuitions and skills that are highly personal and difficult to formalize and therefore, it is not easy to codify or transfer it from one person to another (Nunes, Annansingh, Eaglestone & Wakefield 2006, 105–106).

The SECI-model is a dynamic model of knowledge creation, which is grounded on a presumption that human knowledge is created and expanded through social interaction between individuals and their possessed tacit and explicit knowledge. It assumes that tacit and explicit knowledge are mutually complementary entities that in the activities of innovation interact with and interchange into each other (Nonaka & Takeuchi 1995, 56, 61). The entire process is presented in Figure 6 and management control systems are perceived to have different roles in these interactions (Li et al. 2010, 235).

⁶³ For similar models, see for instance Karhu's (2002) expertise cycle in which tacit knowledge is also transferred into explicit knowledge, and vice versa.

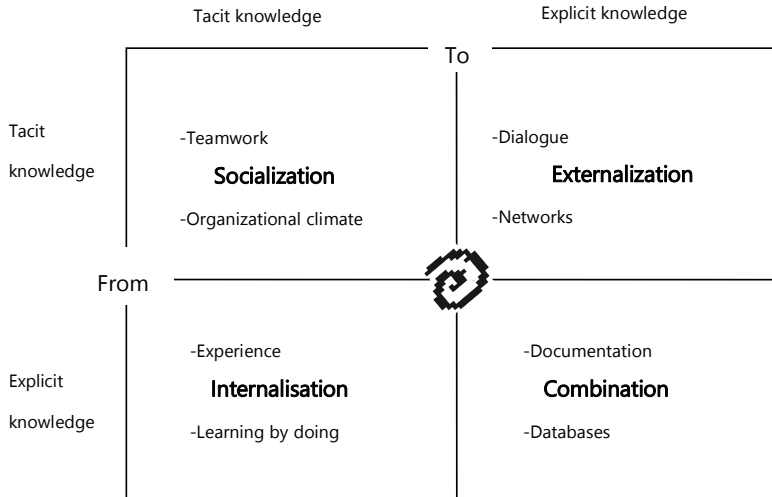


Figure 6 The knowledge spiral model (adapted from Nonaka & Takeuchi 1995, 71)

The model is called knowledge spiral and it starts from the process of socialization. Knowledge conversion mode in the socialization phase is from tacit knowledge to tacit knowledge. The key for acquiring tacit knowledge is experience and it is perceived that tacit knowledge can be acquired without using language. When apprentices work with their mentors, they learn craftsmanship through observation, imitation, and practice, rather than through language. Basically, similar principles are also used on-the-job-training. Socialization includes these kinds of essential occasions of social interaction that are needed to learn new knowledge but on its own socialization is recognized as a limited form of knowledge creation. It is seen to facilitate the sharing of individuals' experiences and mental models (i.e. the tacit knowledge) by building a 'field' of interaction (Nonaka & Takeuchi 1995, 62–71)⁶⁴, in which trust and personal relationships between individuals are

⁶⁴ Knowledge sharing has been recognized by many scholars (see e.g. Sáenz et al. 2009, 34; Rhodes, Hung, Lok, Lien & Wu 2008, 96; Riege 2007, 63) as one of the key issues in enhancing the innovation capability of an organization.

considered as the basis for desirable outcomes (Holste & Fields 2010; Joia & Lemos 2010, 413; Karhu 2002, 434–437).⁶⁵

The second mode in knowledge spiral is called externalization, in which tacit knowledge is converted into explicit concepts (Nonaka & Takeuchi 1995, 64–71). For this to be possible, people need to be aware of the benefits of their possessed knowledge and for instance ensuring that people have detailed job descriptions, key performance indicators against their actions, and generally know what is expected from them and how they create value for the organization and their units will assist in creating the required awareness (Riege 2007, 53–57). In the existence of such awareness, the conversion process from tacit to explicit knowledge is triggered by meaningful ‘dialogue or collective reflection’. By using appropriate metaphors, analogies, and concepts etc. facilitates team members to articulate their hidden tacit knowledge and these conversion processes make externalization a quintessential mode in knowledge-creation as this interaction of tacit and explicit knowledge is then perceived to lead to innovation (Nonaka & Takeuchi 1995, 64–71; see also Karhu 2002, 434; Sveiby 2001a, 349).

This indicates that the production of ideas is addressed as innovation in the knowledge spiral, without the process *per se* denoting about the implementation of the idea(s).⁶⁶ Accordingly, systematic innovation is in this study defined according to Zaltman et al. (1973) as “any idea, practice, or material artefact perceived to be new by the relevant unit of adoption”, whilst innovativeness can be then described as the production of new knowledge that has the potential for practical application in the development of a new product or process (Carson, Ranzijn, Winefield & Marsden 2004, 454). Two types of innovation are recognized in this study: incremental (i.e. process-related knowledge creation) and radical (i.e. outcome-related knowledge creation). Whereas incremental innovation refers to improving current processes, practices, or behaviours by which organizational goals

⁶⁵ Holste and Fields (2010, 129, 134–135) found in their study that both affect-based and cognition-based trusts are positively related to an employee’s willingness to share and use tacit knowledge. Affect-based trust, which is grounded on mutual care and concern between employees, had a greater influence on willingness to share tacit knowledge. In turn, cognition-based trust, which is based on co-worker reliability and competence, had a stronger impact on willingness to use tacit knowledge. Taken together, their results suggested that both warm personal relationships and solid respect for another employee’s professional capability is required for the sharing of tacit knowledge to be successful.

⁶⁶ Some researchers (see e.g. Amabile 1996, 1154–1155; Amabile 1998; 1988, 126) address innovation and creativity as different but linked concepts, the main difference being in the successful implementation of the novel ideas of the creative process. They consider that innovation includes also the implementation of the novel idea whereas creativity is concerned with only the production of the idea.

are accomplished, radical innovation is the ends or outcomes of these processes, which are the objectives themselves such as products of new development work (Turner & Makhija 2006, 198–199; Eisenhardt 1985, 135–136; see also Grant 1996, 377–379).

In the process of combination explicit knowledge is transferred to explicit knowledge. It is a process of systemizing concepts into a knowledge system through such media as documents, meetings or information systems. It is launched by ‘networking’ newly created knowledge and the existing knowledge within the organization, and through such interaction crystallizing them into a novel product, service or managerial system (Nonaka & Takeuchi 1995, 67–71).

These three processes – socialization, externalization, and combination – form the innovation structure of an organization. Carson et al. (2004, 452–453) differentiate innovation structure into informal and formal processes and refer to them as ‘fluid’ and ‘crystallized’ processes. Figure 6 presents examples of ‘fluid’ (informal) innovation structure, i.e. socialization and externalization, which includes for instance organizational climate, teamwork, dialogue, and innovation networks (Carson et al. 2004, 453; Kaplan & Norton 2004a, 55; Marr, Grey & Neely 2003, 454). ‘Crystallized’ (formal) innovation structure, refers for example to data, systems, technologies, databases and routines that are written down or otherwise recorded. These more formal processes, policies, and procedures of the mode of combination can be regarded as ‘tangible’ innovation structure, which are generated to crystallise the ‘fluid’ organizational processes (Pinto, Lopes & Morais 2006, 254; Carson et al. 2004, 452–453). The ‘fluid’ informal processes cannot be owned by the organization but only ‘rented’ (Edvinsson 1997, 369), whereas the formal supporting structure is formed by the intellectual input of the employees. It ‘belongs to the organization’ and can be considered as ‘captured’ knowledge, i.e. explicit knowledge (Carson et al. 2004, 452–453).

The last mode is internalization, through which the foundation for organizational innovation – the ‘raw materials’ of innovation – are created.⁶⁷ It converts the explicit knowledge back to tacit knowledge and it is related to ‘learning by doing’. Due to such conversion, the experiences gained through the organization’s innovation structure (modes of socialization, externalization, and combination) become valuable assets – as long as individuals’ “take them in” into their tacit knowledge bases in the form of shared mental models or technical know-how. However, for organizational knowledge creation to occur, “the tacit knowledge accumulated at

⁶⁷ Although linked concepts, by definition, individual innovation can be considered as different from organizational innovation. Employees’ innovation often provides a starting point for organizational innovation. It involves individual employees’ idea generation whereas the organizational innovation includes idea generation throughout the company (Zhou 2003, 413).

the individual level needs to be socialized with other organizational members, thereby starting a new spiral of knowledge creation” (Nonaka & Takeuchi 1995, 69).⁶⁸

The model addresses that organizational knowledge creation is a continuous and dynamic interaction between tacit and explicit knowledge, and when they interact, innovation emerges (Nonaka & Takeuchi 1995, 70). With such cycle perspective, innovations are not seen to emerge as an outcome of some mystical occasions but rather in truly innovative organizations knowledge creation is a systematic everyday activity, in which for instance lucky coincidences are not needed in order to be innovative (Lecklin & Laine 2009, 54). Therefore, especially in large organizations, innovation is a process that needs to be managed, and such process perspective highlights the relevance of management control systems to support these processes (Adler & Chen 2011; Davila et al. 2009, 285; see also Li et al. 2010, 235).

3.2 Components of innovation

3.2.1 *‘Raw materials’ of innovation*

The componential model of (individual) innovation is developed from experimental research (see Amabile 1983) and it is designed to account for several well-established phenomena of innovation: the importance of talents, education, cognitive skills, interest patterns, and personality dispositions. All of these are seen to function interactively to influence innovation, whilst also motivational state marked by both deep involvement and intellectual playfulness is as well considered (Amabile 1988, 130). Within every individual, innovation is according to the model perceived as a function of three components in any particular environment: domain knowledge built through education and experience⁶⁹, creative-thinking

⁶⁸ Knowledge capabilities are often viewed as a static phenomenon. This is for example when they are considered to be at a certain level at a certain time. However, in practice knowledge capabilities evolve constantly while knowledge is in use and new capabilities are learned (Kupi et al. 2008, 19). From this perspective, certain activities related to knowledge creation such as developing and acquiring new knowledge support the dynamic nature of knowledge creation and at its best, knowledge creation can be viewed as a ‘flow’, whilst the different elements of it can create a ‘virtuous cycle’ (Lönnqvist et al. 2005, 51; Jensen 2001a, 73).

⁶⁹ Definitions of knowledge vary widely in the literature but for instance Oxford advanced learner’s dictionary defines it as: “The information, understanding and skills that you gain through education or experience”.

skills, and motivation and attitude (Pinto et al. 2006, 254; Lönnqvist et al. 2005, 33; Amabile 1998, 78; 1988, 130–134; Roos & Roos 1997, 416; see also Choong 2008).

Domain knowledge is perceived as the basis from which any performance must proceed (Amabile 1988, 130).⁷⁰ The concept of knowledge can be considered as hierarchal and data constitutes the base platform for it. Data can be defined as facts and statistics derived from experimentation or calculation. Information, which is often confused with knowledge, is the next step in the hierarchy. It is perceived as ‘systematically organized data’. It can be described as a message and unlike data, it has meaning (Davenport & Prusak 1998, 2–6). Information, in turn, turns to knowledge when it is understood, manipulated, and the individual can tie it to a purpose and/or an idea (Stevens 2010, 78). From this perspective, knowledge has been conceptualized as ‘actionable information’. It is a mixture of various elements, such as experience, values, and contextual information, and as it is broader, deeper, and richer than information, it supports the processes of decision-making more effectively than information (Davenport & Prusak 1998, 2–6). Converting that knowledge into something that has value can be considered as innovation, making innovation somewhat of a value concept (Lynn 2000, 49; Petty & Guthrie 2000, 159).

However, even with the important domain knowledge to be at an extraordinarily high level, an individual will not produce innovative work if another important piece – creative-thinking skills – are missing. They include skills such as “a cognitive style favourable to taking new perspectives on problems” and “an application of heuristics for the exploration of new cognitive pathways” (Amabile 1988, 131). These two components can be seen as raw material for innovation activities – his or her natural resources – that provide the foundation of innovation (Wang & Chang 2005, 233; Chen et al. 2004, 208; Lynn 2000, 49; Amabile 1998, 78).

To bolster the organizational potential for innovation, diversity of personnel is seen to be beneficial. When organizations comprise people with various intellectual foundations, different personal characteristics and approaches to work – that is, different expertise and creative thinking styles – they increase the likelihood of innovations because people with diverse backgrounds often look things differently and by reflecting these distinct perceptions, ideas often combine and combust in exciting and useful ways (Lecklin & Laine 2009, 58; Amabile 1998, 82; Woodman, Sawyer & Griffin 1993, 313). Managers should therefore take into account for example age distribution when placing and recruiting employees (Amabile 1998, 82; Gupta & Singhal 1993, 41–42). Younger employees are generally seen to be more enthusiastic and willing to search different options and by combining

⁷⁰ Cf. the knowledge spiral (Nonaka & Takeuchi 1995).

this kind of characteristics with the knowledge and experience of older employees, innovativeness often increases (Lecklin & Laine 2009, 58).

Overall, each of the three components of innovation are necessary, and no single component is sufficient for (individual) innovation in and of itself (Amabile 1988, 133, 139). While domain knowledge and creative thinking provide the foundation for the processes of innovation, motivation, however, determines what people will actually do. It affects all the modes of the knowledge spiral, i.e. whether there is willingness to learn and internalize knowledge and convert the possessed knowledge through socialization, externalization, and combination into an innovative product, service, or managerial system (Amabile 1998, 78).

In my opinion innovativeness is in that sense a bit of a wrong word, it should be excitement. If a person is excited, then he/she is innovative. (Director C, interview 28.6.2016)

Consistent with the perceptions in the case organization, literature addresses that no amount of the ‘raw materials’ of innovation – domain knowledge or creative-thinking skills – can compensate for a lack of appropriate motivation to perform an activity (Seidler-de Alwis & Hartmann 2008, 143; Amabile 1988, 133, 139). Due to this criticalness of the innovation component of motivation, I will next turn to it in detail.

3.2.2 Component of motivation

The fullest representations of humanity show people to be curious, energized, striving to learn, self-motivated, proactive and engaged, while at the opposite end, they can be passive and alienated (Ryan & Deci 2000, 68). In terms of the positive potential of human nature, it is perceived that perhaps no single phenomenon reflects its potential as much as intrinsic motivation – “the inherent tendency to seek out novelty and challenge, to extend and exercise one’s capabilities, to explore, and to learn” (Ryan & Deci 2000, 70).

However, much of what human beings do is not truly intrinsically motivated (Ryan & Deci 2000, 71). Although intrinsic motivation is the only type of motivation originating from the person’s solely pure internal desire and interest to act, it is not the only type of self-determined motivation, i.e. a motivation that emanates from the self (Ryan & Deci 2000, 71; Deci & Ryan 1985). These various types of motivations that emanate from the self, reflect distinctive degrees to which the value and regulation of the requested behaviour have been internalized and integrated, i.e. are self-determined or self-motivated. Internalization refers to people “taking in” a value or regulation, while through integration the value will emanate

from their sense of self due to a further transformation of it into their own (Ryan & Deci 2000, 71; Amabile 1988, 133).

Figure 7 presents a taxonomy of motivational types according to self-determination theory. In the taxonomy the types are arranged from left to right in terms of the degree to which motivations are self-determined (i.e. in terms of internal or external perceived locus of causality). At the far left (the negative extreme) of the self-determination continuum is amotivation, the state when a person lacks the intention to act, while at the far right is the state of intrinsic motivation – the person's pure internal desire and interest to act. In turn, extrinsically motivated behaviours cover the continuum between the two extremes – amotivation and intrinsic motivation – varying in the extent to which their regulation is autonomous (Ryan & Deci 2000, 72).

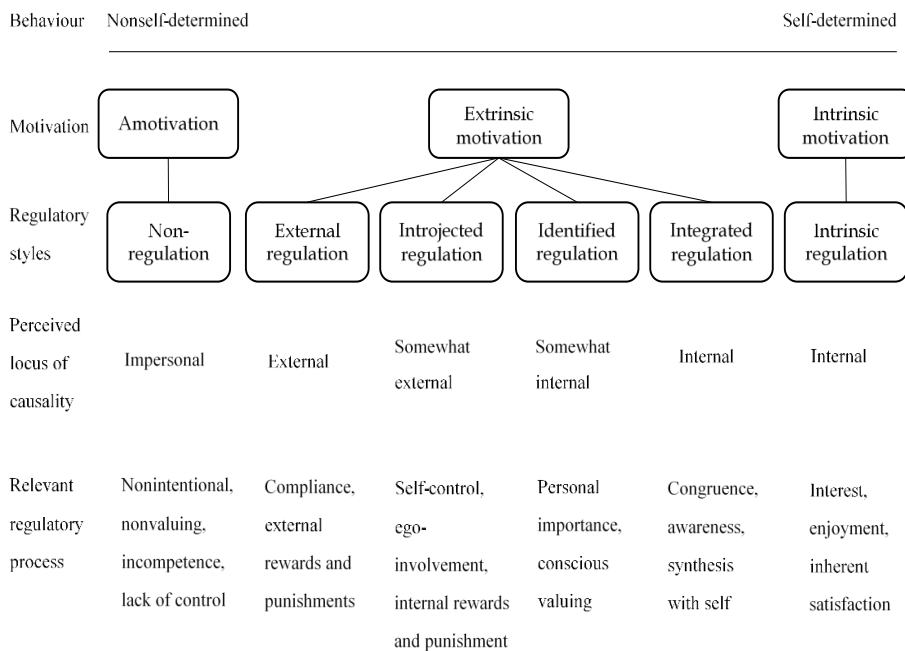


Figure 7 Types of motivation in the self-determination continuum (adapted from Ryan & Deci 2000, 72)

The least autonomous behaviours that are extrinsically motivated are referred to as externally regulated. Such behaviours have an external perceived locus of causality and they are performed to satisfy an external demand or reward contingency. Introjected regulation is a second type of purely extrinsic motivation. Introjection involves taking in a regulation for instance to avoid guilt or anxiety or to demonstrate ability. The regulation is not accepted as one's own and even though it is

internally driven, introjected behaviours still have an external perceived locus of causality (Ryan & Deci 2000, 72; see also Amabile 1988, 133).

A more autonomous form of extrinsic motivation is regulation through identification. Identification reflects a conscious valuing of a behavioural goal or regulation, in a manner that the action is accepted or considered as personally important, i.e. it has been internalized. The most autonomous form of extrinsic motivation is integrated regulation. Integration occurs when identified regulations are fully assimilated to the self. They have internal perceived locus of causality through integration, meaning that they have been evaluated and brought into congruence with individual's other values and needs. Actions characterized by integrated motivation share many qualities with intrinsic motivation but as they are carried out to attain separable outcomes rather than for their inherent enjoyment, they can be still considered extrinsically driven (Ryan & Deci 2000, 72–73). In several studies (e.g. Shalley, Zhou & Oldham 2004; Amabile 1998; 1988; Woodman et al. 1993; see also Ryan & Deci 2000, 73) identified, integrated, intrinsic forms of regulation have been combined to form an autonomous motivation composite, whereas external regulation (being interpersonally controlled) and introjected regulation (being intrapersonally controlled) have been combined to form a controlled motivation composite (see e.g. Amabile 1998; Williams, Grow, Freedman, Ryan & Deci 1996; see also Ryan & Deci 2000, 72).

The controlled forms of motivation are characterized by the external perceived locus of causality and the most common regulatory process managers use are rewards in the form of money. Whereas such processes can have crowding in effects that serve to improve performance (see e.g. Frey 1994), they are, however, considered to be often the root of innovation problems in organizations. In many situations, they can for instance lead people to feel like they are being bribed or controlled (Amabile 1998, 78–80, 84; Woodman et al. 1993, 312; Deci & Ryan 1987, 1026; see also Davila et al. 2009, 282). The feeling generated by the external intervention in the form of for instance monetary reward therefore undermines or “crowds out” autonomous motivation and reduces the performance of the corresponding activity (Frey 1994, 335).

Due to the crowding out effect, innovation-supporting organizations avoid using money to “bribe” people to come up with innovative ideas and rather use intrinsic rewards of work that stimulate autonomous forms of motivation (Amabile 1998, 78–80, 84; Woodman et al. 1993, 312; Deci & Ryan 1987, 1026; see also Davila et al. 2009, 282). Instead of monetary rewards, they use incentives aimed at social rewarding, such as recognition and appraisal that are considered much more effective in encouraging employees. This is seen to be especially the case with more senior employees. Whereas instead of valuing financial rewards, they value intrinsic rewards of work, like feelings of respect and recognition (Ambos &

Schlegelmilch 2009, 499; Slagter 2007, 91). The perceptions in the case organization were rather consistent with the literature and for instance one of the department managers stated (Department manager B, interview 22.6.2016):

I do not think it [extrinsic rewarding] has any role in innovation. If you are innovative, it does not help at all if you get money for it or not. [...] I do not believe that you are any more innovative if you get hundred, thousand or ten thousand euros.

Literature addresses that autonomous forms of motivation afford much greater likelihood of innovation than purely extrinsic motivation (see e.g. Adler & Chen 2011, 73; Amabile 1998, 78–80). In-line with this or taking it even a step further, in the case organization rewarding in the form of money was not considered enhance innovation performance, especially in the long-term. As discussed by the interviewees (e.g. Director C, interview 28.6.2016), autonomous motivation was seen to be in a key role in the activities of innovation and to not to crowd out this kind of excitement emanating from the self, the case organization did not have in place an incentive system for innovations. On the basis of these rather similar perceptions in literature and within the case organization about the superiority of autonomous motivation in serving to improve (long-term) innovation performance, the focus in this study will be on motivation's autonomous composite instead of its controlled forms.⁷¹

Managers can influence all the three components of (individual) innovation, but the individual's raw materials are more difficult and time consuming to influence than motivation (Amabile 1998, 79–80; Suojanen & Brooke, 1971; see also Carson et al. 2004, 450–452). Time and money involved in broadening individuals' knowledge and expanding their creative thinking can be great whereas on the contrary, autonomous forms of motivation "can be increased considerably by even subtle changes in an organization's environment" (Amabile 1998, 80), and this focus into people's environment highlights the importance of control mechanisms in terms of innovation as the organizational working environments are heavily influenced by them (Davila et al. 2009, 285, 289).

From the three components of (individual) innovation, managing and improving domain knowledge and creative-thinking skills should not be forgotten, but when

⁷¹ For controlled forms of motivation and performance evaluation in innovation-dependant firms, see e.g. Grabner 2014. She concludes that for controlled forms of motivation to be suitable in such environments, subjective performance evaluation should be used in combination with performance evaluation and controlled motivation to achieve goal congruence.

it comes to pulling levers, managers should be aware that those that affect autonomous forms of motivation should yield more immediate results (Seidler-de Alwis & Hartmann 2008, 143; Amabile 1998, 79–80). Innovative employees' autonomous forms of motivation need to be managed and managers' can influence such internal desire or motivation by creating the right conditions and context for the employees (Grabner 2014, 1747; Seidler-de Alwis & Hartmann 2008, 143; Amabile 1998, 79; 1988; see also Wang & Chang 2005, 233).⁷²

3.3 Innovation structure

3.3.1 *Informal innovation structure*

Lynn (2000, 49) states that innovation structure is the backbone of the firm itself – its structural tone and capabilities. Through structural support, innovation processes should be endorsed and reinforced by establishing and providing an atmosphere and channels for them, and creating such supporting innovation structure is principally the job of an organization's leaders, who must put in place appropriate systems and procedures, and create a corporate climate that support the company's innovation efforts (Rompho & Siengthai 2012, 500–502; Rhodes et al. 2008, 88; Zhou & Fink 2003, 35; von Krogh, Nonaka & Aben 2001, 425; Amabile 1998, 84; 1988, 147).

Organizational climate is viewed as one of the most important factors for successful knowledge processes (Hanisch, Lindner & Mueller 2009, 155–157; Montequín, Fernández, Cabal & Gutierrez 2006, 536). De Long and Fahey (2000, 123–125) have identified (internal) characteristics of a climate that will help a company

⁷² Nonaka et al. (2000, 13, 25) refer to such shared organizational context as 'ba'. Building and energizing the 'ba' denotes developing a context in which knowledge creation can take place; hence the 'ba' needs to be 'energized' to give energy and quality to the SECI process.

to create and distribute knowledge throughout the organization.⁷³ First, they note that in such organizational climates intense debate is encouraged on key internal and external issues, which demands a set of norms that includes the acceptance of intense questioning of all assertions and observations. This type of productive conflict is viewed essential “to first generate and then reconcile disparate views, and to create new knowledge” (De Long & Fahey 2000, 124).

To have such disparate views, productive conflict should be supported by the entire organization and this can be enhanced by providing equal access to information throughout the organization (Nonaka et. al. 2000, 26–28).⁷⁴ Information, however, creates power and due to that an individual might be motivated to hide it from his or her colleagues. To avoid such inwardness within an organization, it is important for leaders to create an atmosphere in which organization members feel safe sharing their knowledge for the entire organization to support innovation (Nonaka et. al. 2000, 28). A balanced environment of power, control, and trust is needed and the “defend your own turf” mentality that pervades in many organizations should not exist (Perrot 2007, 525; Hope & Fraser 2003a, 108–117). For instance, to successfully exploit older employees’ expertise, an organizational climate where there exists trust and respect is required, and in which their knowledge is recognized and appreciated (Slagter 2007, 91). On the other hand, to enhance individual and organizational trust, open communication channels that are supported by the management are considered to be important (Riege 2007, 53).

Availability of information is thus seen to be a crucial variable in the innovation process as restrictions on information flows and communication channels and rigid formal management structures within organization are seen to inhibit innovation (Amabile et al. 1996, 1162; Woodman et al. 1993, 314; Amabile 1988; Kimberley 1981). Redundancy of information, which is concerned with intentional overlapping of information about business activities, management responsibilities and the organization as a whole, is due to these reasons seen important as it helps organizational members to interact on equal terms and to understand their role in the organization. This is perceived enhance the search for different interpretations of

⁷³ De Long and Fahey (2000, 123–125) also recognize that knowledge from the external environment is expected to be the starting point of innovation, not the end point. In this type of climate exploitation of knowledge from the external environment is encouraged, rather than just being satisfied with absorbing it. Interaction with various stakeholders, such as customers and partners is therefore considered as important contextual variable to increase innovation. For example, through strategic partnerships different, important external perceptions can be obtained (Lecklin & Laine 2009, 59, 62; Woodman et al. 1993, 314). Ultimately, the critical issue within the organization is, however, that the attitude must be that existing external knowledge can and must be enhanced for staying competitive (De Long & Fahey 2000, 123–125).

⁷⁴ Cf. the enabling feature of global transparency (Adler & Borys 1996).

new information and to control individuals' direction of thinking and action, ultimately providing the organization with a self-control mechanism for achieving a certain direction and consistency for the productive conflict (Nonaka et al. 2000, 26–28). The wider the base or personnel concerned with innovations, more likely becomes the process of engaging and listening to various views, which increases the likelihood of a better decision-making, broader acceptance of emerging organizational perspectives, and emergence of innovative ideas (Lecklin & Laine 2009, 55–56; De Long & Fahey 2000, 124; Amabile 1998, 84; Woodman et al. 1993, 313).

Another characteristic is that in knowledge-oriented climates, the existing assumptions and beliefs that shaped the organization's earlier success are challenged.⁷⁵ However, for an organization to question its knowledge about the competitive environment, fundamental beliefs, and current ways of working, it must learn how to diagnose and correct errors in its existing norms and practices (De Long & Fahey 2000, 124–125). It should anyhow be remembered that creating such climate in which mechanisms and routines of participation and knowledge development are being established is not done in a moment. It is a process, which takes time and effort from the organization as well as from the management (Pook 2011, 562). To create such a questioning climate is a particularly difficult challenge for leadership, but it is usually a key step in creating new knowledge within the organization (De Long & Fahey 2000, 124–125).

3.3.2 *Formal innovation structure*

Innovation structure is conventionally used to refer to recorded processes and procedures that are accessible to the organization (Carson et al. 2004, 452–453). Although nowadays organizational climate is seen to play a primary role in relation to technological factors, information and communication technology as well as processes are still perceived essential factors for successful systematic knowledge creation (Hanisch et al. 2009, 155–157; Montequín et al. 2006, 536).

Two central factors explain formal innovation structure's importance for organizations in this respect. Firstly, for employers it is important to capture as much as possible of the knowledge of the employees and convert it into explicit knowledge, or otherwise it may be lost for instance due to high staff turnover (Carson et al.

⁷⁵ It is considered that order and stability do not necessarily contrast with interaction among individuals; instead, interaction can be perceived as a condition for order and stability (Johanson et al. 2006, 853). See also Simons (1995) and interactive control systems that are catalysts for ongoing challenge and debate of underlying data and assumptions.

2004, 450; see also Hansen, Nohria & Tierney 1999). Secondly, an organization needs to have necessary structured ‘channels’ for knowledge creation and transfer (Lecklin & Laine 2009, 56; see also Hansen & al. 1999).⁷⁶

Because of these processes, proper information systems can enhance the efficiency of organization’s innovation processes (Chen et al. 2004, 208) as well as by leveraging them to a greater extent; they can reduce the dependence on individual capabilities (Jacobsen et al. 2005, 573). Information systems, however, might not always act as a supporting mechanism but can also have negative effects on knowledge processes. Possible information overload that can cause difficulties in finding the relevant knowledge is recognized as one pivotal negative effect. Difficulties for instance in learning to use the systems can occur, too (Lönqvist et al. 2005, 126).

Although the positive effects usually exceed the negative effects of technological factors, increasing investments in information technology will not necessarily translate into better use of tacit knowledge because eventually, to achieve such supporting role, information systems rely for their existence on individuals’ willingness (i.e. motivation) and skills to communicate information (Holste & Fields 2010, 135; Carson et al. 2004, 452–453). Managers of an organization should therefore mandate information sharing and collaboration, which can then facilitate motivation and subsequent innovation (Amabile 1998, 84; see also Woodman et al. 1993, 312).

3.4 Understanding innovation in the case organization

3.4.1 ‘Raw materials’ of innovation

As the previous sections introduced, innovation is a function of three components within every individual in any particular environment: domain knowledge built through education and experience, creative-thinking skills, and motivation. During

⁷⁶ Hansen et al. (1999, 106–107) categorize organizations by how they employ their information systems. In organizations that follow a *codification strategy*, knowledge processes focus on computers. In such organizations “knowledge is carefully codified and stored in databases, where it can be accessed and used easily by anyone in the organization”. In other organizations, the main purpose of computers is to help people to communicate knowledge, not to store it. In this type of organizations “knowledge is closely tied to the person who developed it and shared mainly through direct person-to-person contacts”. Hansen et al. (1999, 107) call such knowledge process focus as *personalization strategy*.

the discussions, the interviewees reflected the domain knowledge within the case organization in general, whilst department managers additionally considered the situation also in terms of their own departments. Although few of the interviewees raised some concerns in terms of the knowledge levels in one of the departments within the organization, the respondents generally considered domain knowledge to be rather high in the case organization.

Generally speaking, it is so that we are in a high level in terms of knowledge. It is so that we would not get these jobs if that would not be the case. (Department manager F, interview 4.7.2016)

What we do here, we have a pretty comprehensive knowledge of that. (Project manager C, interview 27.6.2016)

Such high levels of domain knowledge form the basis from which any performance must proceed. In the case organization such knowledge base was seen to originate from both experience and education, although several interviewees perceived experience to have relatively a bigger role in acquiring the tacit knowledge (cf. knowledge spiral mode of internalization).

On average I see it [knowledge within the company] high and what I have seen our competitors' projects, in fact I have got to see them fairly close during last months, I would say that on average in this industry it is high. [...] I would say it is a combination of them [experience and education]. Age distribution is also pretty good. (Director D, interview 30.6.2016)

By reflecting the above and observations as well as discussions in the case organization, I interpret that domain knowledge as well as experience and education levels in the case organization were generally on a sufficient level for innovations to occur. Together with domain knowledge, the other raw material of innovation – creative-thinking skills – provide the foundation of innovation. Even though the domain knowledge would be at an extraordinarily high level, creative-thinking skills of personnel are also needed for an organization to be innovative. In the case organization, it was perceived that for innovations to emerge, enough creative thinking and distinct perceptions exist within its employees.

We [the case organization] do have creative people. [...] part of them [from the entire personnel] just comes to work here. They have their own job and their ambitions are fulfilled with that. But we definitely

do have enough creative people here [for innovations to emerge].
(Department manager B, interview 22.6.2016)

To support such distinct perceptions, the age structure of the organization was addressed to be good and the dialogue between the different age groups was seen to function well (e.g. Director E, interview 1.7.2016; Department manager E, interview 30.6.2016). Such diverse backgrounds should provide distinct perceptions and increase the likelihood of innovations to emerge because people with diverse backgrounds often look things differently and by reflecting these distinct perceptions, ideas often combine and combust in exciting and useful ways. Overall, the beneficial role of diversity in bolstering the potential for innovation through various intellectual foundations, different personal characteristics and approaches to work – that is, different expertise and creative thinking styles – was acknowledged by the operational management. This came forth during the discussions as many of the interviewees (e.g. Department manager B, interview 22.6.2016) mentioned considering such issues when recruiting employees.

The raw materials of innovation – domain knowledge and creative thinking – were by the interviewees considered to be in place in the case organization. Further denoting that there exists a basis for innovation activities, i.e. domain knowledge and creative-thinking skills, but also for instance the required tools, the interviewees noted that the case organization has a great potential for innovations to emerge.

If you think how much we do have opportunities and do have in use very expensive and complicated [IT software] tools that our smaller competitors cannot have – there is like a huge potential [for innovations to emerge]. (Director C, interview 28.6.2016)

Overall, the potential and the foundation (i.e. domain knowledge and creative-thinking skills) for innovation activities built through the process of internalisation were within the management seen to be in place in the case organization. I will thereby turn next to the innovation processes of socialization, externalization, and combination, i.e. to the innovation structure of the case organization, after which I will consider the component of motivation that affects all the modes of the knowledge spiral.

3.4.2 Informal innovation structure

In truly innovative organizations knowledge creation is a systematic everyday activity. However, for an organization to be innovative, literature addresses that a certain basic supporting structure is required. Such innovation structure is built

through correct kind of atmosphere and channels for the processes of innovation. To create and sustain such supporting structure is the job of the organization's leaders and when it is successfully managed, it is in the literature seen to constitute a backbone for the firm itself.

To support such atmosphere and channels, restrictions on information flows and communication channels as well as rigid formal management structures within an organization should be avoided. Following the enabling feature of global transparency, the interviewees considered that the management style of the case organization's top management was rather open towards employees, thereby supporting the information flows and atmosphere required for innovations.

At least I do not feel that personnel are kept under shadow or there [in the top management] is no will to keep personnel informed. (Project manager E, interview 5.7.2016)

It [organization climate] is open. Both, like communication as well as position [of the top management] towards employees is open. (Project manager A, interview 15.6.2016)

In knowledge acquisition, trust and personal relationships between individuals are in the literature considered as the basis for desirable outcomes (cf. knowledge spiral mode of socialization). To create such basis and for the entire organization to support innovation, it is important for leaders to create a balanced environment of power and trust in which organization members feel safe distributing their knowledge. The open management style of the top management enhanced the creation of this type of environment and it existed throughout the organization, starting from the top of the organization. During the interviews, it came rather clearly forth that the leaders of the case organization had been able to create such a balanced working environment of trust.

It [organization climate] is in some way [...] like it gives freedom to work and it trusts, like it trusts people. So like those who are in the organization in different organization levels, those people are trusted and at the same time they are given freedom to work and make decisions. That is like the first thing that comes to mind in relation to it. (Department manager A, interview 21.6.2016)

Within the interviewees, it was perceived that the current low structural organization hierarchy that empowered employees and the past of the case company

with similar climate provided the foundation for the open and trusting atmosphere that is important for knowledge-intensive organizations.⁷⁷

It [atmosphere in the organization] is open. Let us say that there are no barriers for discussion. Organization structure or hierarchy or anything similar in my opinion is not a barrier for it [for discussion], in any level at this organization. We have very low organization hierarchy for a company of this size. (Director C, interview 28.6.2016)

Through the open atmosphere without barriers for discussion, it was generally considered by the interviewees that employees are able to question the existing norms, assumptions, and beliefs throughout the case organization, and control systems could be seen to support the creation of such climate through the enabling feature of repair. Initiatives to identify opportunities for improvement were accepted within the case organization, which should then provide a well-established ground for developing new knowledge.

Here [in the case organization] basically anybody can say almost anything to almost anybody. [...] We have a pretty open atmosphere here. (Department manager F, interview 4.7.2016)

What I have seen and experienced in the world, in that respect we [case organization] have an open organization climate. So you can discuss with anybody basically about anything. Here we do not have strong hierarchies. Basically, anybody can go to the managing director and say that this thing does not work. (Project manager E, interview 5.7.2016)

An open atmosphere in which existing assumptions and old ways of doing things can be questioned came clearly forth also during the interviews. All the interviewees were open about their opinions and none of them were concerned if the discussions for this thesis were anonym or not. For instance, several of the interviewees stated during the discussions that “It does not matter if this is anonym or not, I would still have the same answers.”

In order for the employees to be able to question different matters and through such processes to develop new knowledge, literature addresses that productive conflict should be supported by providing layered access to information throughout the organization. The importance of providing such access is emphasized in

⁷⁷ Cf. asymmetries of power. According to Adler and Borys (1996) such low hierarchy is a force to be pursued by organizations in order to achieve enabling bureaucracy.

the framework of enabling bureaucracy with the feature of internal transparency. Similar to the cybernetic control systems that were characterized by internal transparency, in the case organization that operates on project basis, all the employees could see all the on-going and past projects in the project management system, for instance. This should enable the members of the organization to interact on equal terms, and thereby enhance the search for different interpretations of new information.

So we have the policy that everybody sees everything in every project; all the personnel see all the projects, all old projects. So everybody has reading rights for all the project materials. And I would see that people are employing this and it works. (Project manager A, interview 15.6.2016)

Overall, based on the time spent in the case organization, it came clearly forth that the leaders had been able create an atmosphere in which organization members feel safe sharing their knowledge and in which trust among employees prevails. I interpret that this existing relationship of trust between individuals advanced the creation of an open dialogue between different interfaces within the organization. Although individuals might be motivated to hide information from his or her colleagues due to its ability to create power, the interviewees considered that such issues do not occur within the case organization. This type of “defend your own turf” mentality that pervades in many organizations was not perceived to exist among employees but rather the open dialogue required for the knowledge creation processes of externalization existed within the organization and between its members. The interviewees considered this to be especially important between diverse groups with different approaches to work, for instance between the older more experienced and younger less experienced employees.

We have a quite conversational atmosphere here [in the case organization]. This is an expert organization and everybody has their own expertise areas to discuss about. (Project manager F, interview 5.7.2016)

There is a good [dialogue] between older and younger employees and younger employees are thanking a lot that we do not have that kind of atmosphere in which information is not transferred if you have it. There is not that kind of atmosphere in which you would keep it [knowledge] in a drawer or you would hide it. (Department manager E, interview 30.6.2016)

What in my opinion is good, without any exceptions, that they [younger employees] do experience that they do get the information. It is not like forced to you but when you go and ask, it [knowledge] is distributed and transferred. (Director E, interview 1.7.2016)

As a result, I suggest that the informal innovation structure endorsed the processes of innovation in the case organization. Open information flows and communication channels that were supported by the management were evident, thereby enabling people to interact creatively with each other. Intense questioning of all assertions and observations to develop new knowledge were also generally accepted and in the presence of an open and trusting atmosphere, an open dialogue, especially between senior and younger employees, was considered to exist for diverse perspectives and new knowledge to emerge. Overall, such informal (innovation) structure should support the activities of innovation in an organization.

3.4.3 Formal innovation structure

Innovation structure is conventionally used to refer to recorded processes and procedures that are accessible to the organization, i.e. to the ‘crystallized’ supporting structure such as data, systems, technologies, and databases. Such support is important especially for two reasons. First, for the knowledge processes of combination, an organization needs to have necessary ‘channels’ for knowledge creation and transfer. Secondly, employers should pursue to capture as much as possible of the knowledge of the employees in order to reduce the dependence on individual capabilities (cf. the knowledge spiral mode of internalisation).

By the interviewees, technology and information systems were in general seen to have positive effects on the knowledge processes within the case organization. The systems were continuously used, while they were also seen to function adequately.

If we think about production, IT systems support them [daily operations] very well. (Department manager E, interview 30.6.2016)

I do see it [IT systems’ support] as pretty good. What I have followed them in this environment; they do work and are being used. (Director D, interview 30.6.2016)

While the systems were generally seen to assist in knowledge creation in the case organization, at the same time, certain negative effects of information systems were also noticed by interviewees. Some of them considered that the amount of

information and knowledge that has been ‘captured’ to these systems can lead to a possible information overload, eventually causing difficulties in finding the relevant explicit knowledge.

IT in this kind of an organization is thought as a tool. However, the databases are large and you need to have a hint from somebody from where to start to find the information and some kind of an understanding about the issue. (Department manager C, interview 23.6.2016)

In such cases it was though by considered as a major benefit that instead of the systems related technical support being outsourced, it existed within the organization. The interviewees discussed that assistance in the system related challenges was easily and continuously available and in general, they felt that IT systems do support innovation in the case organization.

We have an ideal situation with IT. We have the experts here in the same location and thereby we do get help immediately. So, I would say that IT supports it [innovation]. (Project manager A, interview 15.6.2016)

Such a situation with possible information overload emphasizes, not only information systems related technical support, but also the importance of an ‘informal’ support with the actual service or product related technical issues that colleagues for instance from different projects, departments, and with different backgrounds can provide. In the presence of open and trusting informal innovation structure, the interviewees discussed that such company-wide support existed within the case organization.

It [climate in the case organization] is open [...] you can search support and you will get it. Like support from your colleagues in technical things. [...] People [case organization’s employees] has expertise and the ones who has it understands the situation and do share it, so people just go there to ensure that something is OK. (Director B, interview 23.6.2016)

Overall, the interviewees perceived that information systems and databases support the daily knowledge processes within the knowledge-intensive case organization. For instance, they were used as channels in knowledge transfer between the prior and current projects, thereby helping people to communicate existing knowledge for further development. Such supporting processes are emphasized in

the knowledge spiral with the process of combination, which is concerned with systemizing concepts into a knowledge system through media such as information systems. These kinds of processes were discussed during the interviews and through them newly created knowledge and existing knowledge from other sections of the organization were by the respondents seen to come across. They perceived that this fosters organizational innovation by starting the innovation process, and through further development via face-to-face, possibly then crystallizes old ideas into a new product or service, for example.

Like when you dig an old project [in the system], like how something was solved at that point, then you can re-use some old idea. [...] sometimes the old idea can develop into better new idea as we have for example gained more experience along the way, like develop in comparison to how the old idea was done. (Project manager B, interview 16.6.2016)

The spark might come via the IT systems and then it [the idea] develops further rather face-to-face. (Project manager A, interview 15.6.2016)

In the case organization, innovations were needed during all the phases of vessel designing, although depending a bit about the scale of the innovation (e.g. Project manager A, interview 15.6.2016; Department manager F, interview 4.7.2016). Innovations were pursued during the production projects but especially through development projects. These included incremental and radical innovation and to continuously success with these processes of innovation, co-operation between different engineering functions and diverse types of IT applications were considered to be in an important role (e.g. Department manager D, interview 29.6.2016; Project manager D, interview 29.6.2016; Director C, interview 28.6.2016; Project manager C, interview 27.6.2016; Project manager B, interview 16.6.2016). In terms of incremental innovation, innovations were expected during the projects to increase efficiency of the procedures within them, for instance.

In every project, I do expect that we would be innovative in the sense that we could come with different ways to do something more rapidly and more efficiently. Otherwise we will fall behind [the competitors] very quickly. (Project manager D, interview 29.6.2016)

To increase productivity within the projects (i.e. incremental innovation), the general arrangement of the vessel effecting the entire engineering process as well as the amount of revision rounds played an important part. From these grounds,

incremental innovations were pursued throughout the entire engineering value chain: in the usage of the concept design in basic and detail design phases, the processes to document and share the project material, the follow-up of the technical readiness of the project(s), and the ways to co-operate with the client and with the user of the end-product, for instance.

Radical innovations were discussed to be related to the co-operative function of developing the vessels' general arrangement and especially to the fuel/energy efficiency of the vessels. The goal was to create better vessel designs that the competitors are able to, and the interviewees considered the superiority to be particularly related to the fuel/energy efficiency of the designs. To improve fuel/energy efficiency, the design of the vessels' hull form, combined with right kind of propulsion systems and weight control were perceived to play a major role (Department manager F, interview 4.7.2016; Director D, interview 30.6.2016). The innovations in these areas of design were not considered to be specifically related to a for instance totally new kind of hull form but rather to the improvement and combination of different related developments within the industry, eventually being able to make the different areas to function superbly with each other.

Our strength, or justification to be on the market, has been clearly our references, like the references from prior projects. We have quite a lot of evidence [from prior projects] that we can perform in different areas [of design] in which we have brought something new to the marine technology/industry. [...] It is not necessarily so that we would have invented something entirely new [within these areas] but rather we have combined different parts in the industry and we have made that entirety to function [in a new and better way than previously]. (Director C, interview 28.6.2016)

With such background and references from prior projects, the case organization esteems itself as a company that offers but more importantly, as a company that has been able to bring and produce new innovative solutions to the marine industry. In Table 5 are presented examples of the radical and incremental innovations that the case organization has been able to produce along the years.

Table 5 Examples of the past innovations produced by the case organization

Vessel type	Innovation type	Innovation area	Innovation
Floating production storage and off-loading vessel	Incremental	Analysis work	Establishment of complex fatigue life analysis in a fast track project
Semi-submersible heavy transport vessel	Radical	General arrangement	Full length cargo deck without conventional bow for better loading/unloading
Hero class pure car truck carrier	Radical	General arrangement	Deck arrangement of the vessel for efficient loading/unloading and for ability to carry versatile cargo
Platform installation/removal and pipelay vessel	Incremental	Engineering process	Establishment of new processes to carry out a large-scale project (up to 300 engineers involved) with short engineering time
Double-ended ferry	Radical	Engine and propulsion concept	Fuel efficient design despite the changing and challenging conditions (e.g. ice) on the (arctic) route
Open hatch bulk carrier	Radical	Hull form / hydrodynamics	Low fuel consumption with shallow draft and high deadweight
Cruise vessel	Radical	Hull form / hydrodynamics	Reduced fuel consumption
Apartment ship	Radical	Safety regulations / general arrangement	First apartment vessel with own kitchens in the apartments, for instance

Overall, the case organization has during its history been able to convert the possessed knowledge into something new that has value. Whether it was for instance incremental innovation for better engineering processes, radical innovation with the vessel's hull form for increased fuel efficiency in comparison to the similar designs in the market, or radical innovation in the general arrangement of the vessel, which can be achieved through close co-operation between different functions in the engineering value chain and can eventually result into novel designs and forms. Such past in the activities of innovation was also acknowledged by the interviewees.

[...] we have always tried to be the one who others are copying. (Director C, interview 28.6.2016)

This firm has been able to create new things and therefore we need to try to cherish it [innovativeness] so that we do not get the image of a copy house. (Project manager F, interview 5.7.2016)

Despite of such past, within the interviewees it was considered that the case organization is not currently innovative enough in relation to the customer expectations and the targeted role in the industry (e.g. Director E, interview 1.7.2016; Project Manager C, 27.6.2016; Department manager B, interview 22.6.2016). Such initiatives were not occurring in a satisfactory amount and it was discussed that the company is rather exploiting these past achievements instead of continuously developing its processes and providing customers with new and innovative solutions.⁷⁸

The brand has been built around it [innovativeness]. In my opinion, we [the case organization] have lost that, that we are the top of the spear and we are the one who takes things forward. I do not see that we are that anymore. In my opinion we are riding a bit with the past reputation, which is not necessarily true anymore. (Project manager E, interview 5.7.2016)

We [the case organization] want to be innovative and we have been but in my opinion at the moment we are not. (Department manager C, interview 23.6.2016)

I'm not sure if we [the case organization] can fulfil the customer promise of being innovative. We have quite a lot of persons whom just like to do things in the way as they have been done previously, like just copying old material. (Project manager A, interview 15.6.2016)

As a result, it can be concluded that the case organization is currently at least to some extent suffering from a shortage of innovations. Although past success can provide a well-grounded foundation for the innovation structure, creating and sustaining of it is an on-going process. It needs to be continuously supported by managers and it should not only allow but also encourage and direct companies to question the existing assumptions and beliefs that shaped organization's earlier success. However, for an organization to question its knowledge about the competitive environment, fundamental beliefs, and current ways of working, it must learn how to diagnose and correct errors in its existing norms and practices. Such

⁷⁸ During informal discussions within the case organization, the researcher was informed that some customers had also recently expressed their dissatisfaction about the novelty of the provided solutions by the case company. Hence, the external perceptions were rather consistent with the internal ones.

mentality, however, was not by the interviewees considered to continuously occur in the case organization.

It feels that couple of times we go to the same trap every second year. Once you make a mistake it is OK but the second time [for the same mistake] is already stupidity. (Project manager D, interview 29.6.2016)

We [the case organization] do not like learn from mistakes. This organization learns really badly from mistakes. (Department manager B, interview 22.6.2016)

To maintain the virtuous cycle of adaptive adjustment where existing assumptions and beliefs are questioned, organizations must according to Adler and Borys (1996) avoid absence of reality checks – a force that encourages coercive logic. Absence of reality checks is concerned with competitive rivalry or with demanding customers in order to have a compelling “reality check”, and this type of external stimulus for improvement is considered as an important prerequisite for organizations to maintain the virtuous cycle of adaptive adjustment. Such external pressure and stimulus from clients (e.g. shipyards) as well as from the owners of the end-product were, nonetheless, experienced within the projects (e.g. Project manager C, interview 27.6.2016). The inability to diagnose and correct errors in the current practices was by the interviewees seen to be rather internally related and originating from the attitudes and mentality within the case organization.

[...] lately there has been a bit more like public servant type carrying of things in this organization. Now you can note more this public servant-like thing, ok this is how it has been done and it is the way as we will always do. (Project manager E, interview 5.7.2016)

I would claim, like in my experience it [not questioning current ways of doing] is in most part just an attitude question – they [part of the employees in the case organization] just don't care. They just approve the [old] habits. [...] They are just not bothered of thinking something new and being critical towards what have been done in the past. (Project manager A, interview 15.6.2016)

The creation of a knowledge-oriented climate is an on-going process and it needs to be continuously supported by managers – firstly to create and then to sustain it. Whereas organizational climate is in the literature viewed as one of the most important factors for successful knowledge processes, I interpret that the one

existing in the case company supports knowledge creation and sharing through the enabling features as it is flexible and open for employees to question the existing norms and beliefs, and in which trust between individuals exist. Information systems were also discovered to enable knowledge creation and to offer channels to develop new knowledge. However, the interviewees noted that the motivational aspect and attitudes within the organization do cause some rigidity in terms of challenging the past success and mistakes and due to these issues, the innovation potential of the case company is not fully exploited. This leads us to the last one of the three components of innovation – motivation – which determines what people will actually do.

3.4.4 Component of motivation

Literature addresses that appropriate motivation is critical to perform an activity and no amount of domain knowledge or creative-thinking skills can compensate for the lack of it. From the two types of motivation composites – controlled and autonomous forms – the latter is in the literature considered more essential to innovations as it affords much greater likelihood for them to emerge than the former one. In the case organization, the interviewees did not consider the controlled forms of motivation to be the root of innovation challenges. Monetary rewarding (i.e. crowding in effect of a reward or regulation) was not perceived to improve innovation performance, especially in the long-term (e.g. Department manager B, interview 22.6.2016). Following such perceptions within the organization, the case company did not have an incentive system for innovations to undermine or crowd out autonomous motivation but nonetheless, a certain kind of excitement originating from the individual to learn and develop, or autonomous motivation if you will, was by the interviewees addressed to be missing among the personnel.

As an aggregate, they [personnel of the case company] are not excited. [...] That kind of claims have been that people come at eight o'clock and leave at four o'clock. So, it is like a public servant job. That do not in any way describe that people would be excited. [...] This whole thing starts from it that we need to have individuals who want to develop first of all themselves, learn things, learn new kinds of things. They take the things forward. That we do have too little. [...] excitement we should have more, like desire to develop him- or herself. You should not be happy with what you know at that moment. (Director C, interview 28.6.2016)

The interviewees perceived that individuals in the case organization were somewhat passive and alienated rather than represented humanity at its fullest by being curious, energized, strived to learn, and self-motivated. Despite the existence of domain knowledge and creative-thinking skills, the lack of motivation was similar to the literature, within the interviewees considered to effect both incremental and radical innovation as the personnel were seen to be rather satisfied with the current processes and solutions (e.g. Director E, interview 1.7.2016; Project manager C, interview 27.6.2016). This was not, however, considered to be a question related to certain individuals but rather an organization wide issue and especially related to the central departments in terms of innovation activities.

There [in the departments] is like individuals who think things in a different way and there is innovative persons but maybe like that kind of that they would throw themselves into the work [...] that is missing – that kind of spirit. [...] Innovativeness can be practised in many levels – what is kept inside [the company] and what is taken out. Somehow that kind of climate should be enforced here [in the case organization] and if we look at the [value] chain, which kind of functionally should be the most innovative area is certainly this concept work, but in my opinion the operations are extremely public servant type at the moment, which does not feed innovative behaviour. Why is it so – I do not know. That [innovative behaviour] we should bring alive. [...] what I have been sensing that here is a bit, this refers again to the public servant-like way of doing, here we just are and do, and do not take any extra steps. This group of people [in the last personnel survey] was shockingly huge and to that we should do something. That was like a worryingly big group of people. In principle, nothing matters [for this group of people]. Especially there, where we should have that motivated and innovative people, there that group of people to whom nothing matters is the largest. This is extremely worrying. (Director E, interview 1.7.2016)

During the interviews, such lack of motivation was discussed to some extent exist also within the middle management. This kind of state can then rather easily pour down to the lower levels as the middle management is a central ‘group’ in continuous innovation due to their position at the intersection of vertical and horizontal flows of information in an organization.

Of course in the “production” there is people who do not have that forward going mentality but if we discuss about key personnel, there

has been that forward going mentality. Now it seems that it has at least partly been lost. (Department manager C, interview 23.6.2016)

It can be concluded that the inventory of skill sets (e.g. creative-thinking skills) and domain knowledge of the employees should support the innovation efforts of the case organization. The foundation and potential for innovation exists, but according to the interviewees, the organization was nonetheless suffering from a shortage of innovations. In the end, however, it is motivation that determines what people will actually do and the required autonomous forms of motivation, which afford much greater likelihood of innovation than controlled motivation, were by the interviewees perceived to be to some extent missing in the case organization. Autonomous forms of motivation must be managed and from the three components of innovation, literature addresses motivation can be most easily influenced by managers as even subtle changes in an organization's environment can affect it positively. While much of what people do is not intrinsically motivated, managers' can influence such internal desire by creating the right conditions and context for employees.

The informal and formal innovation structures of the case organization were identified to be generally in place and to favour activities of innovation. While the enabling features supported the creation of a transparent/open climate and IT systems that allowed to for example question existing assumptions and share knowledge to develop new, the motivational levels within the company were during the interviews discussed to cause some rigidity in terms of challenging the competitive environment, existing processes, and done mistakes to develop new knowledge and operations, for instance. Creating such a mentality in which errors in existing norms and practices are diagnosed and corrected is according to literature a particularly difficult challenge for leadership, but nevertheless often a key step of becoming an innovative organization. I will next turn to basic psychological needs that must be fulfilled to support motivation and subsequent innovation, and to different cybernetic control systems related management practices, which have been identified important in supporting the psychological needs and innovation in the workplace.

4 PROBLEMATIZING THE POSTULATED ASSOCIATIONS BETWEEN ENABLING FORMALIZATION AND INNOVATION

4.1 Basic psychological needs

Self-determination theory understands occurrences such as why employees show no initiative with respect to undermining of intrinsic motivation but also, and even more typically, as failure of internalization. The theory thus recognizes that extrinsically motivated individuals can become self-determined through internalization and integration. Individuals can be extrinsically motivated and still be committed and authentic and according to the theory, such factors are most likely to be evident when individuals experience support for basic psychological needs (Ryan & Deci 2000, 74).

The basic psychological needs theory is a subtheory within the self-determination framework and it elaborates the concept of basic needs. A basic need or a psychological need is “an energizing state that, if satisfied, conduces toward health and well-being but, if not satisfied, contributes to pathology and ill-being” (p. 74). Such state comes forth in individuals as being proactive and engaged or, alternatively, passive and alienated. The needs are thus considered to be highly salient for producing variability in autonomous forms of motivation, while the theory perceives them also as innate, essential, and universal. All of the basic needs, however, must be satisfied for individuals to thrive and to be autonomously motivated (Ryan & Deci 2000).

The theory postulates three such innate needs for psychological growth and well-being – the needs for competence, autonomy, and relatedness (Deci & Ryan 1985). Support for effectance (e.g. through communication), for autonomy (e.g. through non-excessive control), i.e. feeling of volition that can accompany any act, and for feelings of connection with others (e.g. through ‘nurturing’ style of management) is argued to be a prerequisite for optimum functioning of these organismic integrative processes of well-being (Ryan & Deci 2000; Ryan 1995, 410; Deci & Ryan 1985; see also Zhou & Shalley 2003, 193).

Autonomous motivation is seen to flourish if circumstances permit, i.e. if contexts are supportive of autonomy, competence, and relatedness. Another subtheory of the self-determination theory, cognitive evaluation theory, aims at specifying such social and environmental factors that explain variability in autonomous mo-

tivation, i.e. factors that facilitate versus undermine autonomous motivation. Facilitating contexts foster greater internalization and integration whereas undermining contexts impede satisfaction of the three basic psychological needs (Ryan & Deci 2000, 70–71, 74–76; Deci & Ryan 1987).

The cognitive evaluation theory (Deci & Ryan 1985) posits that all contextual factors represent either informational or controlling aspects and whether such factors have positive or negative effects on autonomous forms of motivation, depends on the relative salience of these factors. Hence, the theory recognizes that it should be possible to classify the functional significance (i.e. the psychological meaning) of any input affecting the initiation and regulation of intentional behaviour to either one of these categories. Controlling practices constrain individuals to think, feel, or behave in specified way. On the contrary, when the informational aspect is more salient, individuals perceive that the contextual factor allows autonomy to achieve things and provides relevant information about their personal competence. In such situation, individuals should feel supported and encouraged, resulting in increased levels of motivation and subsequent activities of innovation (Shalley et al. 2004, 935–936; Zhou 2003, 414; Oldham & Cummings 1996; Deci, Connell & Ryan 1989, 580; Deci & Ryan 1987; 1985). Ultimately, an input experienced as informational is seen to foster self-determination, whereas self-determination diminishes in case it is experienced as controlling (Deci et al. 1989, 580; Deci & Ryan 1985).

In terms of purely intrinsic motivation, social-contextual events such as feedback and communication practices that advance feelings of *competence* during action can motivate the individual for better performance in terms of that action. Accordingly, the introduction of optimal challenges, effectance-promoting feedback, and supporting evaluations instead of demeaning are all seen to facilitate intrinsic motivation. Feelings of competence or efficacy, however, are not seen to enhance intrinsic motivation unless accompanied by a sense of autonomy. People must not only experience competence but also their behaviour as self-determined for intrinsic motivation to take place, and this requires a context supporting the basic need of *autonomy*. Extrinsic rewards as well as for instance too tight deadlines and imperative evaluations are therefore seen to reduce pure intrinsic motivation because they facilitate a more external perceived locus of causality (i.e. diminished autonomy) (Ryan & Deci 2000, 70–71, 74–76; Deci & Ryan 1987).

Although autonomy and competence are highly salient for producing variability in intrinsic motivation, the need of *relatedness* must as well be satisfied for individuals to thrive. The social context should not be for instance cold and uncaring but rather characterized by a sense of security and relatedness. If the social contexts in which individuals are embedded are responsive to the all three basic psychological needs, they are perceived to “provide the appropriate developmental lattice upon which an active, assimilative, and integrated nature can ascend” (p. 76). On

the contrary, for instance excessive control, non-optimal challenges, and lack of connectedness are seen to result in passive behaviour with lack of initiative and responsibility (Ryan & Deci 2000, 70–71, 74–76).

Adler and Borys (1996, 80; see also Adler & Chen 2011; 76) state that enabling formalization support motivation and subsequent innovation through internalization of values, and to some extent consistent with the social conditions for intrinsic motivation, are the conditions that nurture internalization and integration. Extrinsically motivated behaviours as such are not typically interesting and due to this, *relatedness*, the need to feel belongingness and connectedness with others, is seen centrally important for internalization and self-determined behaviour. The primary reason why people initially perform such (uninteresting) actions is “because the behaviours are prompted, modelled, or valued by significant others to whom they feel (or want to feel) attached or related” (p. 73). The feeling of *competence* plays also an important role in the relative internalization of extrinsically motivated activities because when people feel efficacious in performing those activities that relevant social groups value, they are seen to be more likely to embrace them. The third basic psychological need – *autonomy* – facilitates internalization and is especially critical element for integration. Contexts can yield autonomous motivation only if they are supporting autonomy, or in other words, allowing the person to feel competent, related, and autonomous. For integration, people must transform the regulation to their own and synthesize its meaning with respect to their other goals and values, and support for autonomy (e.g. sense of choice and volition) allows individuals to transform values into their own (Ryan & Deci 2000, 73–74).

Through the three basic needs, the social psychological approach considers that factors in the social environment (i.e. in the work environment) can hinder or encourage innovation by influencing motivational state of employees (Shalley et al. 2004, 935; Ryan & Deci 2000, 70; Amabile 1998, 79; Amabile 1996a; 1996b, 5; 1988; 134; Deci & Ryan 1985). The influence between the individual and the organizations is, however, a two-way by nature – there is no innovation without creative ideas from individuals, while the social organizational contexts can concurrently undermine or facilitate such processes (Ryan & Deci 2000, 74). Due to the liberal human assets, the organizational or social economy of creativity is looked to rest uneasily and therefore, management has to integrate human assets and the surrounding innovation structure. This way individual variables are aligned with organizational purposes and pushes them in certain “predictable” directions. “Freedom” exists to operate, but within the framework of metaphors, technologies and procedures that are found in the innovation structure (Mouritsen et al. 2002, 16; see also Nonaka et. al. 2000, 28). Because of such processes, successful organizations that achieve competitive advantage in the marketplace through innovation and knowledge creation are not seen to be innovative by accident. People are innovative organizations’ most vital resource and by providing the right conditions

and effectively managing the human resources, organizations should be able to create innovative products and services (Gupta & Singhal 1993, 41).

I will next turn to these contextual factors in detail and consider them through the three basic psychological needs. Under these needs I will discuss different management practices that have been recognized to hinder or encourage innovation by influencing motivational state of employees, and due to this management perspective, these practices can be seen to be closely connected to management control systems. Supporting the needs of autonomy, competence, and relatedness are considered as management activities that effect innovativeness, but which are also closely affected by cybernetic control systems through for instance excessive control, goal setting, and evaluation and follow-up. In addition to Deci and Ryan (1985) and Ryan and Deci (2000), similar accounts have been identified also by Amabile et al. (1996; see also Amabile 1998; Amabile 1997; 46–50; 1988, 146–148; Woodman et al. 1993), for instance. These practices to endorse or inhibit innovation in the workplace can be seen to have solid empirical foundation as they are based on an empirically tested model for organizational innovation and on more than two decades of research that have focused primarily on one question – what are the links between work environment and innovation (Amabile 1998; Amabile et al. 1996; see also Amabile 1988).⁷⁹

4.2 Managing the social environment of innovation

4.2.1 *Autonomy*

Contexts can yield autonomous motivation only if they are supporting autonomy. People must transform the regulation to their own and synthesize its meaning with respect to their other goals and values, and support for autonomy (e.g. sense of choice and volition) allows individuals to transform values into their own (Ryan & Deci 2000, 73–74). Through management enabled characteristics such as risk taking, freedom for creativity, and operative autonomy these organizational goals can become mutual, which should then foster innovation (Nonaka et. al. 2000, 26; Amabile 1998, 82–84). Innovative organizations therefore grant individuals the freedom to create and innovate, and this type of autonomy, or in Adler and Borys' (1996) terms system enabled flexibility, can be granted in various ways such as

⁷⁹ Amabile et al. (1996, 1158) note that many of these mechanisms derive from the autonomous motivation principle and they categorize the management practices to freedom, organizational and supervisory support, and different types of pressures.

through divisional freedom, freedom to conduct research, freedom to fail, and freedom to work independently. In these kinds of organizations senior management encourages individual initiatives and risk taking as well as accepts failures as a price of being innovative (Gupta & Singhal 1993, 43–45).

Overall, employees should have a sense of ownership and control of their work ideas, such as freedom in deciding how to achieve the goal or mission of a project and this type of operational autonomy – freedom in the day-to-day conduct of one’s work – is considered to be the most important type of autonomy (Amabile 1988, 147; Amabile et al. 1996, 1161). Leaders should therefore recognize that the key to innovation lies in “giving people autonomy concerning the means – that is, concerning processes – but not necessarily the ends” (Amabile 1998, 81).

Clearly defined targets that remain stable for a meaningful period of time do therefore often stimulate innovative behaviour – in case the organizational members have the autonomy and flexibility to choose how to accomplish the desired ends (Pfister & Lukka 2017; Nonaka et. al. 2000, 26; Amabile 1998, 81). In other words, people are often more innovative if they are given freedom to decide how to climb a particular mountain although they would not be given to choose which mountain to climb (Amabile 1998, 81). The behaviour is in this way experienced as self-motivated by people (cf. Pfister & Lukka 2017; Ryan & Deci 2000, 70), while allowing such autonomy is perceived to simultaneously increase also the commitment levels of individuals (Nonaka et. al. 2000, 26; Amabile 1998, 81).

4.2.2 Competence

From the autonomous motivation perspective of innovation, supervisor behaviour is seen as a critical factor as people are seen to be more likely to adopt activities when they feel efficacious (i.e. competent) with respect to those activities (Zhou 2003, 414). Several studies (e.g. Zhou 2003; Tierney, Farmer & Graen 1999; Oldham & Cummings 1996; Kimberley 1981) have shown that for instance open interactions with supervisors and encouragement enhance employees’ autonomous forms of motivation and subsequent innovation. Managers should be able to create an atmosphere free of threatening judgement between themselves and their subordinates, and encourage their subordinates to voice their own concerns, initiatives and viewpoints (Shin & Zhou 2003, 704; Deci & al. 1989; Deci & Ryan 1985; see also Bass 1985). Motivation and innovation can be undermined by greeting innovative efforts with scepticism and therefore, rather than reacting to new ideas sceptically with criticism, managers should follow the enabling feature of repair and let their subordinates to participate in decision making and meet their ideas with

open minds as well as without demeaning judgement (Amabile 1998, 83; 1988, 147; Ryan & Deci 2000, 70).⁸⁰

Of all the things managers can do to stimulate innovation on an individual level, Amabile (1998, 81) addresses that the most efficacious way is perhaps the simple task of matching people with the right assignments – assignments that challenge them. When jobs are challenging, they are seen to connect to individuals' domain knowledge and their creative thinking skills, and ignite autonomous motivation (Amabile 1998, 81; Oldham & Cummings 1996, 610, 626). The correct amount of challenge stretches employees' abilities but the amount of stretch, however, is crucial: in the right amount so that employees do not feel bored but neither so much that due to a loss of control they feel overwhelmed (Amabile 1998, 81).

Like matching people with the right assignments, decisions in terms of the time given can either support or hinder innovation (Amabile 1998, 82; 1988 147–148; see also Woodman et al. 1993, 314). Time is considered as an important resource in terms of innovation, especially in (knowledge-intensive) service organizations (Amabile 1998, 82; 1988 147–148). Innovations do take time and therefore innovative organizations are seen to allow their employees a certain amount of free time for reflection and dialogue (Joia & Lemos 2010, 413; Gupta & Singhal 1993, 43–45). Deciding how much time to give for example to a project is, however, a sophisticated judgement call as time pressure can often also stimulate innovation. For instance, providing pressure on a project by scheduling it and by monitoring the schedule, can be apt to stimulate autonomous forms of motivation as it may increase the sense of challenge in the project members (Amabile 1998, 82).

Goal setting is considered also as an effective motivational technique (Amabile 1998, 83; Locke & Latham 1990). Following the enabling feature of internal transparency, the basic motivational assumption of goal setting is that goals increase attention and effort by offering individuals with clear targets toward which they can direct their energies and challenge themselves (Pfister & Lukka 2017; Zhou & Shalley 2003, 179).⁸¹ Although goals serve to motivate and direct attention to important facets of for instance a task or a project (Zhou & Shalley 2003, 179), they also allow the autonomy and flexibility for organizational members to choose how to accomplish the desired ends, thereby giving rise to the use of knowledge in original or novel ways (Simons 1995, 70, 90; Simons 1994, 177–178). As processes are not specified or known priori, individuals should be motivated to engage in experimentation and to change their approaches in order to attain desired outcomes (Amabile 1998, 81; Simons 1995, 70, 90; Simons 1994, 177–178; see also

⁸⁰ Cf. enabling feature of repair, through which managers should be able to identify and bring forth opportunities for improvement.

⁸¹ For a cybernetic control system to be internally transparent, target values for performance must be communicated to the users of the system.

Pfister & Lukka 2017). Such unsystematic processes are critical for discovering new knowledge (Turner & Makhija 2006, 205; Nonaka 1994, 20) and if goal setting does not restrict these processes but only provide the targets to focus on, it is associated with greater originality in the use of knowledge and considered to be driven by autonomous forms of motivation rather than their controlled forms (Pfister & Lukka 2017; Canonico, De Nito & Mangia 2012, 546; Li et al. 2010, 235–237; Turner & Makhija 2006, 205, 207, 213; Cardinal 2001, 28, 30).

Although some authors have found goal setting to exert negative pressures on employees (see e.g. Henri 2006, 543–546), several studies (see e.g. Pfister & Lukka 2017; Canonico et al. 2012, 546; Turner & Makhija 2006) consider that traditional mechanistic controls with a goal setting ability⁸² can be positively associated with motivation and subsequent innovation.⁸³ For instance, Nixon (1998, 343; see also Pfister & Lukka 2017; Davila et al. 2009, 287; Alvesson & Kärreman 2004, 442) found out in his case study that financial controls were intended to support the design and development process by communicating clear goals, metrics, and milestones for project participants to challenge themselves, while particularly they were to serve in integrating the disparate perspectives of different related stakeholders.⁸⁴ As a result, Grabner and Speckbacher (2016, 34, 41) assess that even when innovation is highly important, there is still good reason for managers to employ formal control and use performance evaluations based on predefined goals and targets.

⁸² Often referred in the literature as *results control* (see e.g. Merchant & Van der Stede 2007, 28; Ditillo 2004, 409) or *diagnostic control* (Simons 1995, 59–61), through which control is mainly exercised via setting targets that serve to foster the output-directed behaviour and to ensure predictable goal achievement.

⁸³ Turner and Makhija (2006) conducted a theoretical study, demonstrating the impact of organizational controls on knowledge processes. In the study they consider how different control systems diverge in relation to particular knowledge management process and argue that goal setting is highly amenable to knowledge creation. For quantitative studies see e.g. Grabner and Speckbacher (2016), Rompho and Siengthai (2012), Rijdsdijk and van den Ende (2011), Li et al. (2010), and Cardinal (2001).

⁸⁴ Davila (2000, 404; see also Fisher 1998, 49–50) found out that instead of using traditional mechanistic controls to reduce goal divergence in innovation, organizations use them also to obtain information needed to reduce uncertainty in process. When the uncertainty is coming from market (e.g. complex and dynamic) or from project (e.g. non-routine tasks) scope, management controls are considered to be especially relevant as, when it originates from technology, prototyping is seen to replace management controls systems. For instance, cost information is seen to have a positive effect upon new product development performance.

In relation to the concept of challenge, yet rather on an organizational than on individual or project/team level, right kind of creative chaos is seen to stimulate organizations and their members. Creative chaos is different from complete disorder; it is “intentional chaos introduced to the organization by its leaders to evoke a sense of crisis amongst its members by proposing challenging goals or ambiguous visions” (Nonaka et. al. 2000, 26; see also Marsh & Burke 2001, 68, 75). By transparently articulating the compelling vision, employees should be excited and energized to work hard toward achieving these higher goals and objectives (Shin & Zhou 2003, 704–705; see also Bass 1985). This increased excitement, energy, and concentration are then, according to autonomous motivation perspective, likely to result in to higher levels of innovation (Amabile 1996a).

However, although a strategic senior manager may be able to make the cognitive leap required to see a distant opportunity or to come up with an ambiguous vision, it does not mean that the rest of the organization or even top management is also able to make such leap. Getting others to see what the strategic leader sees – and to embrace it – is considered extremely difficult. In fact, it is much easier to persuade an organization to pursue incremental, less risky opportunities. When the cognitive shift requires a change in the organization’s identity, the resistance can be even more stubborn (Gavetti 2011, 122). Such resistance may for instance result into infighting, politicking, and gossip, which are considered to be particularly damaging to innovation because they take people’s attention away from work (Amabile 1998, 84). Nevertheless, the introduction of challenging goals to the organization and organization’s consequent adaptation to the ambiguous vision, is seen to help to focus organizational members’ attention and encourage them to transcend existing boundaries in defining and resolving problems (Nonaka et. al. 2000, 26).

4.2.3 *Relatedness*

The social context should not be for instance cold and uncaring but rather characterized by a sense of security and relatedness. To create such feelings within the personnel, the desired actions and behaviours should be modelled, valued, or prompted by others to whom people feel attached or related, i.e. by the management. Innovations should be on the management agenda and managers can for instance boost employees’ innovativeness by offering personal examples and therefore, they should have a passion for new knowledge equally as their subordinates (Sáenz et al. 2009, 34; Gupta & Singhal 1993, 47; Amabile 1998, 82–84; Amabile 1988, 147). However, for employees to sustain such a passion for new knowledge, most people need to feel that their work matters to the organization or to some

important group of people and because of that, relatedness and supervisory support for innovative behaviour is perceived to be essential (Amabile 1998, 83).

Non-supportive supervisors are for instance perceived to closely monitor employee behaviour and generally demand that employees follow strict rules and guidelines (Deci & al. 1989; Deci & Ryan 1985). In turn, supportive supervisors show concern for employees' feelings and needs, facilitate employee skill development, show empathy and appreciation, and develop nurturing relationships with them to promote innovation (Shin & Zhou 2003, 704; Zhou & Shalley 2003, 193; Deci & al. 1989; Deci & Ryan 1985; see also Woodman et al. 1993, 313; Bass 1985). For managers, this for instance means that the subordinates' progress in relation to their goals should be transparently and frequently communicated by the managers in order to build relatedness and properly support their subordinates work. Hence, while goals serve to motivate and direct attention, it is critical that they are constantly monitored and the situation and development of the related activities are regularly considered and prompted (Zhou & Shalley 2003, 179; Amabile 1998, 83–84).

Such processes of performance evaluation and follow-up are an integral part of any job, thereby offering managers comprehensive ways to build relatedness with their subordinates (Groen et al. 2017, 55–56, 62; Zhou & Shalley 2003, 182). Feedback and evaluation styles refer to the manner in which they are delivered and as all contextual factors according to the autonomous motivation perspective (cf. Deci & Ryan 1985), the styles can be categorized to informational and controlling ones (Shalley et al. 2004, 940; Zhou 1998, 263; Ryan 1982). Controlling style makes external constraints salient by emphasizing certain types of ideas that the feedback recipient must obtain. By following the coercive approach to the enabling feature of flexibility and by making external control salient, the controlling style instils feelings of external causality to the feedback recipient, letting the recipient to feel that his or her behaviour and actions did not originate from his- or herself but from controlling others. This is seen to result in lowered autonomous motivation and subsequently lower innovation (Shalley et al. 2004, 940; Zhou 2003; Zhou & Shalley 2003, 185–186; see also Deci & Ryan 1987, 1026–1027).

In-line with such evaluation style in the use of management accounting data is Hopwood's (1972a, 160) notion of budget constrained style of evaluation. In the budget constrained style, the evaluation is primarily based upon the responsible person's ability to continually meet the prior set objectives on a short-term basis. This criterion of performance is stressed at the expense of other valued and important criteria and regardless of other considerations, the responsible person will tend to receive unfavourable evaluation if for instance his or her actual costs exceed the prior estimated costs.

In turn, informational style of evaluation is not restrictive or constraining, and if it is developmental by nature, the recipient should experience the evaluation as

supportive, through which he or she may exhibit higher creativity (Shalley et al. 2004, 940; Zhou 2003; Zhou & Shalley 2003, 185–186; see also Deci & Ryan 1987, 1026–1027). Hopwood (1972a, 160) refers to such an evaluation style as profit conscious style, in which the performance of the responsible person is evaluated on the basis of his/her ability to increase the general effectiveness of the operations in relation to the long-term purposes of the organization. Similar to the enabling feature of global transparency, through which managers should comprehend the up- and downstream implications of their work, the idea is to reflect the direction of concern (e.g. general effectiveness of operations) rather than a constraint and to achieve this, available management accounting data must be used with some care and in a rather flexible manner.

In addition to the budget constrained and profit conscious styles, Hopwood (1972a, 160) defines a third style of evaluation, namely the non-accounting style.⁸⁵ Although the non-accounting style can be considered as an informational one, it designates different, a more “allowing” usage of the management accounting data because low relative importance is attached to the data in the superior’s evaluation of the responsible person’s performance. Despite of that, control systems can represent an important means of feedback to the responsible subordinate, influencing his/her self-evaluation and subsequent behaviour even though they are somewhat relatively unimportant in his/her superior’s evaluation (Hopwood 1972a, 174).

Managers using the budget constrained or profit conscious styles, unlike those using the non-accounting style, are considered trying to create a structured job environment. However, the profit conscious managers are simultaneously perceived being considerate of the attitudes and feelings of their subordinates. In this respect, non-accounting style managers are similar, while the ones following the budget constrained style are clearly different (Hopwood 1972b, 191–192). In studying these different styles, Hopwood (1972a, 166, 168) discovered that subordinates that are being evaluated on the basis of the budget constrained style, experience significantly higher level of job related tension than those that who are evaluated on the basis of either the profit conscious or non-accounting style. The manager and subordinate relationship is seen to deteriorate if the manager is using the budget constrained style or even if the manager attempts to combine the budget constrained and profit conscious styles. On the other hand, if the supervisor uses a

⁸⁵ Hopwood (1972b, 191) subcategorizes the non-accounting style of evaluation processes into three categories: 1. a relative neglect of the accounting data where the data are potentially relevant to assessing performance and managing the task 2. a relative neglect of the accounting data where the data are not very useful for assessing performance and managing the task, and 3. a relative neglect of the accounting data in performance evaluation but use of the data in decision making and less evaluative feedback, where the data are relevant.

profit conscious style, the relationship between the manager and subordinate is more favourable than with even a manager using the non-accounting style.

The profit conscious style is considered as a demanding style of evaluation that applies pressure on the subordinate when it is appropriate but at the same time, it is seen also as a fair one.⁸⁶ Uncontrollable variances from the objectives are either not queried or, even if they are queried, they can usually be explained. This ability to explain and discuss between the manager and subordinate that builds relatedness, plays an important role in avoiding the too high tensions and anxiety with the job and between the manager-subordinate relationship that are associated with the budget constrained style, a style which approach can be described as “just do not do it, rather than asking for explanations” (Hopwood 1972a, 166, 168).⁸⁷

I interpret that Hopwood’s (1972a; 1972b) non-accounting and profit conscious styles have many similarities with the features of enabling formalization. Whereas they are both informational and flexible according to the enabling features of global transparency and flexibility, they also disclose the long-term objectives and thereby represent important means of feedback to the responsible subordinate, as emphasized with the enabling feature of internal transparency. Both non-accounting and profit conscious styles are seen also as fair ones and characterized by the ability to explain and discuss between the manager and subordinate, and this plays an important role in avoiding the too high tensions and anxiety with the job and between the manager-subordinate relationship that are associated with the budget constrained style. Similar accounts are, in turn, highlighted in the framework of enabling bureaucracy with the feature of repair. If discussed and deemed to be appropriate, identifying opportunities for improvement and dealing with unexpected defects are welcomed, unlike in the coercive approach.

Literature addresses that only when meeting the previously set objectives becomes overly important in relation to other valued criteria of job performance, the unfavourable consequences such as job and manager-subordinate related tensions occur. When other important criteria are considered concurrently and the previously set goals do not achieve too high relative importance in performance evaluation, the objectives are seen to add an important element of structure and clarity to the job environment. Because in the profit conscious and non-accounting styles of evaluation the other important criteria are considered concurrently, unlike in the

⁸⁶ Management control systems are seen to play a central role in creating competitive pressures within organizations to innovate and adapt (Davila et al. 2009, 285; Simons 1995, 92; see also Pfister & Lukka 2017).

⁸⁷ Henri (2006) had similar findings as he found out that in companies following control values, there are significant and negative relationships between knowledge processes and tensions, while firms favouring flexibility values are seen to benefit from the right amount of tension. See also Bedford (2015) and Davila (2005).

budget constrained style, significant positive relationships between the absolute importance of meeting the previously set objectives are seen to occur only with these two styles of evaluation (Hopwood 1972a, 173).

While a manager may want to make his/her subordinates aware of the relevant aspects of accounting data, to use such data in their evaluation is potentially inequitable and may encourage defensive behaviour. This is, however, contrary to the very goals the accounting systems are designed to serve. Data from the management control systems does not in itself pose a threat to the members of an organization and therefore, a manager is not confronted with a choice between using or not using the systems in evaluating the performance of his/her subordinates. Instead, a manager can reap many of the benefits of the control system and build relatedness with the subordinates by stressing factors which the system attempts to measure without this resulting in either emotional costs (e.g. the evaluated persons' lack of motivation) or defensive behaviour that are unfavourable for the organization (Hopwood 1972a, 174).

Such effects of evaluation depend on the style in which it is delivered. Employees should respond most positively to developmental and positive evaluation and feedback when it is done in a supportive informational style, i.e. in profit conscious style. Employees may exhibit relatively moderate innovation when they receive positive feedback delivered in a controlling style (i.e. budget constrained style of evaluation) or negative evaluation done in an informational style. Finally, employees should respond negatively when negative feedback is given in a controlling or budget constrained style of evaluation (Zhou & Shalley 2003, 185–186; Zhou 1998, 263–264). The budget constrained style is in the literature considered to result in less innovative behaviour without maintaining a flexible response to unusual circumstances – to issues that are seen to be nowhere near so prevalent with either the profit conscious or non-accounting styles of performance evaluation (Hopwood's 1972a, 174–176). Therefore, when negative feedback must be given, it should be delivered in profit conscious style rather than in controlling style (Zhou & Shalley 2003, 185–186; Zhou 1998, 263–264).

Performance evaluation and follow-up are an integral part of any job and through such processes people can feel that management pays attention to their work, cares about it enough to find out what is going on, and gives constructive feedback of their performance (Zhou & Shalley 2003, 182; Amabile 1988, 149). The profit conscious style of evaluation is in the literature addressed to result to satisfied subordinates even though it does not result in easier job requirements. It is a demanding style but Hopwood (1972a) considers it as a fair one and as a style that is accepted as well as respected by the subordinates, while it also appears to be an aspect of a problem-solving style of management. The system is seen as a valuable aid to management, and when its reports are used in a creative manner, it serves as “a bias for inquiry and a source of ideas for change” (Hopwood's 1972a,

174–176). With this kind of management support and focus, managers can build relatedness with their subordinates and for instance emphasize innovations, which should then lead personnel to perceive innovation activities more important. Such prompting and valuing by others to whom people feel attached or related, i.e. by the management, is then considered to push people often for better innovation performance through increased autonomous motivation (Amabile 1998, 82–84; Lecklin & Laine 2009, 57).

4.2.4 The delicate balance of management practices influencing innovation

From the factors in the social environment that effect motivation and subsequent innovation can be identified clear innovation promoters if they exist, while their absence or opposites are clear innovation inhibitors. Clear opposites are for instance autonomy/flexibility and constraint as well as good and bad organizational climate. Good organizational climate is marked by co-operation and collaboration that are supported by globally and internally transparent systems, whereas poor one is marked by the absence of these factors. Furthermore, sufficient time and proper information systems support innovation while, on the contrary, insufficient time and inadequate information systems serve as obstacles. A good manager is skilled socially whereas a poor one is not (Amabile 1988, 148).

Despite the presence of such clear opposites, not all of the environmental factors influencing innovation are quite so straightforward. Appropriate management climate for innovation involves creating and sustaining a delicate balance in several of these arenas (Amabile 1988, 148). Goal setting is one of these factors (Zhou & Shalley 2003, 179–180; Amabile 1988, 148–149). Managers can stifle innovation if their goal setting is either too loose or too tight (Amabile 1988, 148; cf. Otley 2012, 256). If the systems are not internally transparent and managers fail to provide clear direction and to communicate the overall mission for instance for a project, only part of the project team members' capabilities may be exploited or at worst, they may even fail to make any efforts at all. On the other hand, if managers practice too tight management through goals at the operational level – the day-to-day performing of activities – subordinates may become demotivated due to lack of autonomy and flexibility (Amabile 1988, 148–149).

Evaluation is also a balancing act as evaluation pressure can inhibit or increase employees' motivation (Amabile 1988, 149; see also Grabner & Speckbacher 2016, 34, 41). When people feel threatened by unfavorable performance reviews for failures (cf. the basic psychological need of competence), it can lead to low levels of repair efforts and risk-taking and consequently, to low levels of innovation. In turn, to support the need of relatedness, people do still need to feel that management pays attention to their work, cares about it enough to find out what is

going on, and gives constructive feedback of their performance (Zhou & Shalley 2003, 182; Amabile 1988, 149). Hence, while the nature of evaluation is seen to be crucial, the attention should be also frequent in a balanced use of evaluation (Johanson et al. 2006, 852; see also Skoog 2003; 501). If employees find out “how they are performing” only once or twice a year in formal performance appraisal settings, motivation and innovation are likely to be undermined. If, however, there is constant and constructive information exchange about for instance a project’s progress between management and subordinates, evaluation settings should support motivation and subsequent activities of innovation (Amabile 1988, 149; see also Hansen et al. 2003, 98; Hope & Fraser 2003b, 108–112; Hope & Fraser 2000, 34–35).⁸⁸ For instance, the settings can be used as a platform to share, analyse, and distribute performance results, and if this evaluation is done in a balanced way, such processes should enable organizational information sharing that is seen to enhance the creation of new knowledge (Rompho & Siengthai 2012, 500–502).

Overall, inappropriate follow-up and evaluation by managers are seen to undermine motivation and innovation, while appropriate (cybernetic) systems have been found to facilitate autonomous motivation by establishing an organization in which learning and innovation are continually stimulated (Widener 2007, 778; Henri 2006, 546; Ryan & Deci 2000, 70; Amabile 1998, 83–84; Amabile 1988, 147–148). Such intellectual stimulation of employees involves for instance questioning of assumptions, challenging the status quo and old ways of doing things, and encouragement to problem reformulation (Shin & Zhou 2003, 704; see also Bass 1985).

Existing evidence suggests also seemingly paradoxical influences of pressures arising from the challenging nature of tasks (Shalley et al. 2004, 941–942; Amabile et al. 1996, 1161, 1174; Amabile 1988, 149). Although for example extreme workload pressures can undermine innovation, some (i.e. a balanced) degree of pressure through for instance urgency can influence it positively if it adds to the positive tension of challenge (Amabile 1988, 149–150). The benefits of such pressures were also recognized within the top management of the case organization.

From the company perspective, that kind of situation when it is always a bit tough situation, that is good. Also, if workload is too small a person will become lazy. There should continuously be a bit overload of work. Then you need to think different ways of doing the work

⁸⁸ Similar ideas are noted also by Simons (1995) who refers to them as interactive control systems. Interactive control systems are formal information systems that focus on process and which managers exploit to involve themselves regularly and personally in the decision activities of subordinates as well as to facilitate ongoing communication between top managers, lower level of management and organizational members. See also Mundy (2010).

and then the development comes kind of as forced. (Director C, interview 28.6.2016)

A balanced amount of pressure, in the form of for instance time pressure or competition, is perceived to be appropriate to innovation as it may add to the perception of challenge in the work that positively correlates with autonomous forms of motivation and subsequent innovation. If there is no sense of time urgency for example in a project, the project can come across to the involved individuals as unimportant (cf. the basic psychological need of relatedness), whereas if time pressure is too great, people may be forced to take the simplest, most unimaginative route (Amabile 1988, 148–150).

Another form of pressure is the presence of competitive others. Competition is an interpersonal or intergroup activity in an organization, between departments, project teams, or profit centers, for instance. It can stimulate innovation but if it is perceived as threatening, innovation tend to be affected negatively. On the other hand, the stimulating positive effects on innovation can result if competition adds to the tension of challenge and draws the team members closer together (Amabile 1988, 148–150). This type of interpersonal or intergroup competition is considered to provide individuals with valuable information concerning how they are performing (against the competing others) and individuals are perceived to welcome and desire such information and transparency. This is seen to allure the feeling of challenge within them that maintains or enhances their autonomous motivation through the basic psychological need of competence, and subsequently their innovativeness often increases (Zhou & Shalley 2003, 192; Shalley & Oldham 1997, 337, 342–343).

4.3 Social environment of innovation in the case organization

4.3.1 *Autonomy*

Organizations can foster innovation by granting individuals autonomy and freedom for creativity. Individuals should have the possibility to work independently as well as opportunities, power, and authority for reflection, experimentation, and generation of new ideas. Literature addresses that the most important type of autonomy is operational autonomy – freedom in the day-to-day conduct of one's work. However, when the issue is about granting such autonomy, the key to innovation is giving people flexibility concerning the means but not necessarily the ends. In the case organization, the top management considered that personnel have

the possibility to work independently and are given freedom to choose the means to reach the pursued objectives.

In here [in the case organization] we do not force to any kind of mould in that way, it is like the most important that the work gets done in a way that the customer is satisfied. It is quite free here. (Director D, interview 30.6.2016)

Consistent with the top management's perceptions, the middle management felt that they were empowered within the organization to make their own decisions related to their daily work. Supported by the enabling feature of flexibility, the middle management was independently able to develop the daily operative processes (incremental innovation) and to co-operate with the customers in order to create new solutions for them (radical innovation), instead of being under close monitoring according to the coercive approach. In fact, providing such autonomy and flexibility was considered to be one of the strengths of the case organization.

Rarely somebody comes and say that this is the way how you should do some specific thing. (Project manager B, interview 16.6.2016)

In my opinion that [working independently] is a big benefit here [in the case organization]. If we something have here it is that you can do even if it would not go that well. The atmosphere is really kind of free here. (Project manager C, interview 27.6.2016)

Such autonomy in the day-to-day conducting of work is particularly critical element for integration, whilst it is in the literature also seen to enhance internalization of values. It simultaneously often increases the commitment levels of individuals and such fortifying effects to commitment⁸⁹ were noticed during the interviews as for instance one of the department managers stated (Department manager E, interview 30.6.2016):

It [the possibility to work independently] is in fact from a personal point of view one of the biggest things why I have stayed here [in the case organization] for this long. At least as long as I have been here I have had the feeling that I can work very independently.

⁸⁹ Adler and Borys (1996) consider commitment as a substitute for coercive formalization.

Such solid commitment levels came forth also in the personnel surveys. They were in the case organization's middle management clearly above the average levels in comparison to similar type of expert organizations (case organization's personnel surveys 2016 & 2014).⁹⁰

In organizations characterized with high autonomy of employees, senior management also encourages individual initiatives and accepts failures as a price of being innovative. Supporting the initiatives to create new knowledge in the case organization, such freedom to fail was seen to exist as all the interviewees considered that mistakes are rather just a part of doing different things. Mistakes were accepted and viewed as something that cannot be avoided in the long run.

I would see that mistakes are approved here [in the case organization]. Mistakes are done, they are done once in a while by each one of and I would see that it is OK. (Department manager A, interview 21.6.2016)

We do accept them [mistakes] even too much. They are being noted but a mistake as such, nobody is shot because of that. (Department manager B, interview 22.6.2016)

Supported by the enabling feature of flexibility, employees of the case organization felt that they have high levels of autonomy in the day-to-day conducting of their work, for instance to create and innovate. Throughout both – the meeting observations and interviews – the organizational context came forth as autonomy supportive. Control was not excessive nor did it pressure individuals to think, feel, or behave in a specified way. Thinking “outside the box” and failures were accepted to create new knowledge and freedom in conducting one's work was by the interviewees experienced as one of the major strongpoints of working in the case organization. Overall, I argue that the basic psychological need of *autonomy* was well supported within the organization, or in other words, the feeling of volition was accompanying the acts that the employees were performing. This should then facilitate integration and internalization and allow individuals to transform values into their own and, as such, support autonomous forms of motivation and subsequent processes of innovation.

⁹⁰ The personnel surveys were conducted by a renowned third-party specialised on personnel matters, which through their years of operating in the market possessed extensive comparing data in terms of commitment levels within organizations in Finland.

4.3.2 Competence

Subordinates open interaction with their supervisors is in the literature considered to play a critical role in supporting the innovation initiatives within an organization. By greeting new ideas rather with criticism than with open minds, managers can undermine motivation and subsequent innovation as threatening judgement is considered to hamper feelings of competence. Managers should rather create an atmosphere free of demeaning judgement and encourage employees to voice their own concerns, initiatives and viewpoints in order for the employees to reflect existing knowledge in novel ways. Supporting the basic psychological need of *competence*, the interviewees considered that such threatening judgement does not exist in the case organization. Initiatives were rather encouraged and opportunities to develop new knowledge based on these initiatives were given.

[...] as a company we have possibilities and opportunities are given if you have enough excitement to take something forward. To my mind do not come any occasions during my career [in the case company] that such [initiatives] would have been stopped or eliminated. So, there has been chances to try and do. (Director C, interview 28.6.2016)

Following the enabling feature of repair, initiatives to identify opportunities for improvement were accepted within the case organization. As perceived also by the top management, middle management felt that they are able to voice their own concerns, that their thoughts are taken into account, and that they are able to participate in decision making related to their tasks. They thereby had the feeling that they can bring up new solutions in terms of vessel designing (radical innovation) or how to improve the existing processes related to their work (incremental innovation), for instance. Some of the middle managers considered that new ideas are sometimes judged even too lightly (Project manager B, interview 16.6.2016):

It [organization climate] is rather open, in a way like all kinds of things, like thoughts are being accepted and noted. If somebody has some good idea, it is usually listened and thought that if there is some grounds in it. So, you can question things. Sometimes you can maybe do things even too freely.

In addition to the absence of demeaning judgement, the basic psychological need of competence can be enhanced by the simple task of matching people with right assignments that challenge them, which is in the literature considered as one

of the most efficacious way to endorse individual innovation. When jobs are challenging, they are seen to play to individuals' domain knowledge and their skills in creative thinking, and ignite intrinsic motivation. Within the interviewees, it was generally perceived that the work assignments of the case organization provide challenges to the employees.

I think we can excellently give challenges to them [to the personnel].
(Department manager B, interview 22.6.2016)

While employees were in general challenged with work assignments, the situation was no different within the middle management. External challenges were evident for instance through continuously changing project assignments with customers from different countries and with different cultural backgrounds, whereas the existing mentalities and attitudes in the organization created internal challenges in managing the departments and projects.

I thereby interpret that the lack of enthusiasm within the organization did not originate from personnel being bored with non-challenging work assignments, with assignments that would not ignite their autonomous motivation and endorse subsequent innovation. On the contrary, the interviewees recognized that in some projects the requirement levels were even too high for some of the less experienced employees. Challenging of the employees to a correct extent through work assignments was, however, acknowledged within the management in order to stretch the employees' abilities in the right amount so that they do not feel bored but neither in a way that they feel overwhelmed.

We have like really challenging tasks. I have asked my guys that are you ready to do something and the replies have been that let's wait for a while. And some of the older employees want to focus where their expertise is. (Department manager A, interview 21.6.2016)

The general feeling in the case organization was that there is a good balance in terms of challenging and matching people with the right assignments. Optimal challenges are in the literature considered to increase the basic psychological need of competence, and as the work assignments within the case organization were challenging in the right amount, I argue that they supported the organizational members' feeling of *competence* required for autonomous motivation and subsequent innovation.

Literature addresses goal setting to be an effective motivational technique as goals are seen to increase attention and effort by offering individuals with clear targets toward which they can direct their energies and challenge themselves. In the framework of enabling bureaucracy, offering such targets is emphasized with

the feature of internal transparency, and for a cybernetic control system to be internally transparent, target values for performance must be communicated to the users of the system. Whereas goal setting offers clear targets toward which individuals can direct their energies, they also allow the autonomy and freedom for organizational members to choose how to accomplish the desired ends. As autonomy and enabling feature of flexibility were identified to exist in the case organization, such targets should facilitate autonomous forms of motivation within its members. In the case company, the fiscal year organization level targets to focus on were communicated to the middle management through the annual budgeting process.

It [the budgeting process] gives the overall image and like objectives and kind of what you should focus on. (Department manager C, interview 23.6.2016)

Going down to a project level, the interviewees considered that the (financial) goals of the projects are communicated with the project budget, i.e. with the project calculation that is done at the time when the project is quoted to the customer and based on which the customer has ordered the work from the case organization. By being the base for the customer quotation and for the possible following order, the project budget provides the initial data for the project monitoring system report.

Objectives are communicated at that point when we go through the project budget. Like at the time when it [project] has been sold to the customer. [...] And those budget figures are something that we believe we can achieve. (Project manager A, interview 15.6.2016)

As the cybernetic control systems were internally transparent, the objectives for employees to focus on and to challenge themselves were disclosed within the case organization. They were communicated on an organizational level through the annual budget, while for the project-based case organization, the more operational level objectives for the day-to-day performing of activities was done through the project budgets. This should allow employees to direct their energies towards these targets and in the existence of autonomy, lead them to choose innovative ways to achieve the targets, as emphasized by Adler and Chen (2011, 75; see also Adler & Borys 1996).

In relation to organizational level goals and challenges, the top management had introduced a new strategy and vision for the company during year 2015. The five-year plan was done on a group level, which parent company the case organization is, and it included expansion to new areas of business, substantial increase in the group turnover as well as requirements for new and different kind of expertise

needed within the parent company. Hence, the plan was introducing an ambiguous vision and goals that would bring even more challenging projects to the group. For the case organization's employees, this would mean learning new capabilities, more challenging tasks, and especially, a need for different and new kind of thinking about the entire engineering process, including related incremental innovations. Management had used a good amount of their time in implementing the new strategy and according to the 2016 personnel survey, the implementation had been rather successful. Despite the ambiguous new vision was acknowledged on an organizational level, roughly one and a half year after introduction of it when the interviews were conducted, the case organization was not, however, considered to be excited and energized to achieve these (new) long-term objectives, or in other words, they were not properly internalized within the organization.

[...] here [in the case organization] is not that kind of boost that we would need. [...] Here you have that kind of sleepy feeling. (Project manager D, interview 29.6.2016)

In these organization level occasions and documents, the company was referred and communicated to the personnel as the 'trendsetter' of the industry that possesses high levels of expertise (case organization's internal documents). Within the interviewees, it was considered that although the new vision and objectives did not create excitement within the employees, the existing and required competence levels for such a role in the industry are acknowledged within the organization. Such acknowledgement was seen to be partly due to the past position and history of the case organization but also due to this effectance-promoting communication. I suggest that these together did on a company level then add to the organizational members' basic psychological need of *competence*.

[...] we [case organization's employees] experience ourselves like some sort of top organization in this industry. [...] Many of us experience this firm as better than other companies [i.e. competitors]. (Director D, interview 30.6.2016)

While the interviewees considered that the project works *per se* created a sense of challenge within the team members, the objectives for employees to focus on and to challenge themselves could be, according to the enabling feature of internal transparency, noticed to be also in place in the case organization. Further, there were no demeaning judgement within the organization and as supported by the enabling feature of repair, employees were able to voice their own concerns, initiatives and viewpoints in order to develop new knowledge. All these features are in the literature perceived to support the basic psychological need of *competence*,

which was then evident in the case organization as the members generally experienced themselves competent in the industry in which the company is operating. Hence, the feeling of *competence* existed throughout the organization, thereby supporting autonomous motivation and subsequent activities of innovation.

4.3.3 *Relatedness*

4.3.3.1 *Organization level*

During the collection of empirical material for this thesis, the organizational social context of the case company presented itself with a sense of security. An open atmosphere, in which employees are able to question the existing norms, assumptions, and beliefs existed throughout the organization, and through the enabling feature of repair, control systems supported the acceptance of such initiatives to identify opportunities for improvement. This was further articulated by the interviewees as none of them were concerned if the discussions for this thesis were anonymous or not. Such sense of security is in the literature perceived to support the basic psychological need of *relatedness*. However, for social context to be supportive for the need of relatedness, also connectedness with others, with those to whom people feel attached or related, should exist. Performance follow-up and evaluation are important in this respect. They are an integral part of any job and through such processes, people can feel that management pays attention to their work, cares about it enough to find out what is going on, and gives constructive feedback of their performance.

The meeting observations indicated that the balanced scorecard is the main tool for organization level follow-up and evaluation in the case organization, and this was further verified during the discussions with the interviewees. It was used by top and middle management in several meetings, such as production management, administrative management, and sales management meetings. To the production management meetings participated department, top, and certain project managers, whilst they were chaired by one of the top managers. The meeting was organized weekly but the reports were reviewed usually once a month after the monthly reporting cycle. The latest balanced scorecard -report was on the agenda on each occasion, whereas for instance the rolling forecasting model was addressed only quarterly if not otherwise needed as a supporting data for the balanced scorecard. One of the directors discussed about the balanced scorecard's purpose in these meetings in the following manner (Director C, interview 28.6.2016):

The primary objective of it [the balanced scorecard] is that it is clear enough and we can use these four entirities to communicate them throughout the entire organization. So to communicate the main perspectives, in a way that to whom it is distributed, understand where are we at. That is the objective of it. It gives you the main direction – are we there where we should be. (Director C, interview 28.6.2016)

Following the enabling feature of global transparency, the balanced scorecard offered information beyond one's specific domain of work. Its main role from the top management's perspective was to communicate the overall situation of the case organization in relation to the agreed targets, thereby providing employees with information and opportunities to challenge themselves, and ignite autonomous motivation. It was following and comparing the business operations in relation to the objectives disclosed and set in an internally transparent way with the annual budget. It was not, however, used in a controlling style of evaluation. Instead of employing it as restrictive or constraining in order to make external constraints salient (cf. enabling feature of flexibility), the interviewees perceived the balanced scorecard to have a rather informational role in the meetings.

It [the balanced scorecard] has more like an informative role in these meetings. (Department manager A, interview 21.6.2016)

Such informational and transparent style of follow-up and evaluation was observed also in the meetings to which the researcher participated and according to Adler and Chen (2011, 75; see also Adler & Borys 1996, 80), this type of enabling usage of control systems that make transparent the organization's goals and progress toward these goals should induce autonomous motivation through internalization of values. In these meetings, it was also witnessed that the style of the top management did not generate much pressures for the middle managers. Whereas the interviewees perceived that the balanced scorecard sometimes acted as a kind of a wakeup call when the company was not performing well (cf. chapter 2.3.4), such stimulus was not considered to be constant (e.g. Department manager D, interview 25.1.2017). Top managers did not frequently challenge the participants in these meetings through the balanced scorecard by for instance questioning assumptions, challenging the status quo and old ways of doing things, and encouraging problem reformulation. The profit conscious style applies these types of pressures on the subordinate when it is appropriate, unlike the non-accounting style of evaluation. I thereby suggest that the use of the balanced scorecard in follow-up and evaluation was in the case organization inclined more towards the non-accounting style than profit conscious (or budget constrained) style(s). Supporting these observations, one of the directors noted (Director E, interview 1.7.2016):

Nobody does them [management reports] just for fun. Based on it [balanced scorecard] more should be done. Somebody follows them [indicators] just for the fun of following but in my opinion based on them more should happen.

In the somewhat absence of right kind of pressures, the department managers described different meetings and the balanced scorecard's role in them in the following manner:

In sales meetings it [the balanced scorecard] has never been taken that seriously. It is a bit like that this is just this [balanced scorecard]. (Department manager C, interview 23.6.2016)

It [the balanced scorecard] should be more directive but to some extent it remains as informative. (Department manager F, interview 4.7.2016)

Maybe it [production management meeting] is a bit like a tasteless entirety sometimes, we just go through things and look the graphs [of the balanced scorecard] and see that this graph goes nicely and this one badly, and nobody like reacts to anything [to the indicators/graphs of the balanced scorecard] in any way. [...] When it was going extremely bad few months ago, and all the graphs did look bad, then in some way, at least in the meetings where I was, not much attention was paid to it [to the balanced scorecard] – like what should be done in order to get the graphs to point to the right direction. (Department manager A, interview 21.6.2016)

Unlike managers using the non-accounting style of evaluation, the ones using the budget constrained or profit conscious styles are in the literature considered trying to create a structured environment. More pressures are applied about the direction of concern to build such an environment. Further supporting the findings that organizational level evaluation in the case organization had primarily features of the non-accounting style, the lack of adequate pressures was also evident in this respect. Instead of having a structured job environment for instance for the activities of innovation, the case organization was considered to be rather “floating” and “drifting” (cf. Chapman & Kihn 2009), as discussed by one of the department managers (Department manager F, interview 4.7.2016):

In some way, how would I say, if the management does not lead, then it leads that we kind of just are and go, and just float and drift, and that is a bit of a problem here [in the case organization]. At some point you would just need to be strict and tough. Every manager at some point will be in that situation and it is not necessarily nice that you need to push things forward.

During the interviews, the department managers discussed that they would desire management to apply more pressures about the direction of concern according to the profit conscious style of evaluation even though the style would not result in any easier job requirements for them (cf. Hopwood 1972a & 1972b). They would have accepted and respected a follow-up and evaluation manner that applies more pressures on them because such style was considered more proximate and supportive than what the current informational (non-accounting) style provides, which was not regarded assertive enough to properly manage the organization nor the subordinate managers.

Top management has not like managed this, like from there has not been any management. It [the balanced scorecard] is as a tool that they should use. (Department manager B, interview 22.6.2016)

In the current situation, the organization level follow-up and evaluation style without right kind of pressures was experienced as somewhat distant – to some extent lacking management overall. The department managers wanted to feel that management pays more attention to their work, cares about it enough to find out what is going on (in the production), and simultaneously provides more constructive feedback of their performance. I suggest that such feelings advanced the department managers' lack of basic psychological need of *relatedness* – the need to feel belongingness and connectedness with others (i.e. with the top management). In terms of top managers contributing to the relatedness between top and middle management in the innovation dependent case organization, the department managers for instance discussed:

I would want something more from the top management; there do not come much like [constructive] discussion – they should like do something. [...] Like the top and middle management fellowship is not acquired in any way. (Department manager B, interview 22.6.2016)

The top management is not that interested what we are doing in production, like in a level that do we innovate. It is pretty much everything else what is being talked about in these joint meeting of ours. (Department manager E, interview 30.6.2016)

As the balanced scorecard was the primary tool for organizational level follow-up and evaluation, I interpret that its informative usage did not sufficiently support the middle managers and arouse their autonomous motivation. Creative employees' autonomous forms of motivation and subsequent innovation activities, however, can and need to be managed and to support such management actions, they should be on the management agenda. Top managers should lead by example and as employees, they should have a passion for new knowledge. In the case organization, the interviewees considered that innovations are on the top management's agenda (e.g. Project manager E, interview 5.7.2016; Project manager F, interview 5.7.2016; Project manager D, interview 29.6.2016; Department manager B, interview 22.6.2016; Department manager A, interview 21.6.2016). They were for instance disclosed by the top management as one of the company's principal values and emphasized by them in a transparent way during personnel info sessions. In such environment, the significance of innovation activities was generally acknowledged within the middle management. However, when I discussed the issue further with the middle managers, it came forth that instead of such recognition of the importance of innovation activities originating directly from management actions, several interviewees considered them rather just as somewhat self-evident due to the price level and overall competitiveness of the case company. When I asked how innovation is emphasized in the organization, replies of the interviewees were often similar to the following (Project manager A, interview 15.6.2016):

I cannot give you any concrete examples. I think it is kind of obvious that we need it. We just do not manage by copying old stuff. Chinese can also copy that same old stuff. [...] It can be that at the bottom of the organization the importance of them [of innovations and innovativeness] is not that clear. But I think all the project managers whom I have discussed with, keeps them as self-evident. That we need to sell a bit more something else than just drawing [the design pictures].

In the absence of assertive enough management, many of the interviewees did perceive that innovation activities are not emphasised frequently and consistently enough in the case organization. They were seen to remain as somewhat abstract. While a certain kind of (targeted) role in the industry was highlighted on an organizational level for instance with internal documents, company brochures, and during personnel info sessions by addressing the prior achieved (and targeted) role

and the brand promise of an innovative company, the interviewees perceived that the importance of innovations is not fully internalized by the employees on an operational level – the day-to-day performing of activities.

We have these info sessions and leaflets where it [innovativeness] is brought forward, like what every company have and which is good for people to listen, but which is not in a way fully acknowledged by them. (Department manager A, interview 21.6.2016)

It [innovativeness] is an important issue and it needs to pour down from the top management to the organization. It cannot be emphasized too much in a way. We should have like more ways of emphasizing it. Innovations are easily like just rhetoric and abstract, like what is actual meant by it. (Project manager B, interview 16.6.2016)

Maybe in general level but not in practice [top management emphasizes innovativeness]. Not in operative level. (Department manager D, interview 29.6.2016)

Through measurement and related follow-up and evaluation processes organizations can, however, focus attention and action to what is important in terms of the implementation of the strategy. Such management support and focus can continuously highlight innovation activities, through which personnel should then perceive them more important and internalize the values into their own. The basic psychological need of relatedness is considered to be critical for such internalization of values, whereas Adler and Chen (2011, 75) as well as Adler and Borys (1996, 80) emphasize that enabling formalization encourages motivation and innovation based on an internalization of both goals and the discipline necessary to reach them. I will therefore consider relatedness further on an operational (i.e. project) level within the project-based case organization, on a level where innovations should especially flourish. This is done particularly through follow-up and evaluation related processes, with which management can frequently emphasize the desired (innovation) activities and gain connectedness with their subordinates.

4.3.3.2 Project level

Projects run the day-to-day business of the case company and therefore within these development (i.e. R&D) or production related projects majority of the incremental or radical innovations should occur. As the operational activities are performed within projects, the project monitoring system was considered as one of

the most important management control systems within the case organization (e.g. Department manager E, interview 30.6.2016). Follow-up and evaluation of projects are done through this system and in so called project management meetings.

Our core business are projects, any kind of [floating structure related marine or offshore projects]. The follow-up of them happens in practice once a month in a project management meeting. (Project manager C, interview 27.6.2016)

These meetings are organized in the case organization once a month after the financial figures for the previous month and other related reports have been prepared. The meeting is chaired by one of the top managers and the participants include project, department as well as other top managers, thereby offering them information beyond their specific domain of work (cf. enabling feature of global transparency). For the meetings project managers are required to report certain predetermined (technical) issues in addition to the financial report from the project monitoring system, while they are also according to the enabling feature of repair encouraged to bring up specific concerns regarding to their projects.

During the interviews, it became apparent that in the organization the responsible person (project manager in this case) did not receive unfavourable evaluation if for instance his or her actual costs exceeded the prior estimated costs (e.g. Project manager D, interview 29.6.2016) or if the project made a financial loss (e.g. Project manager C, interview 27.6.2016). Hence, the evaluation was not delivered in a coercive or controlling style that might jeopardize project managers' feeling that their behaviour and actions did not originate from themselves. The system was rather used in a flexible manner as it allowed project managers autonomy in their daily (innovation) activities (cf. enabling feature of flexibility). I thereby interpret that the systems and the related follow-up was following either non-accounting or profit conscious styles of evaluation.

Both of these two informational styles of evaluation are in the literature considered as fair ones and correspondingly, the management style of the top managers was in the middle management perceived to be fair towards employees and such characteristics came forth also in the personnel survey results (case organization's personnel survey 2016). Top management was seen supportive in the sense that they showed concern for employees' feelings as well as were easy to approach (e.g. Project manager E, interview 5.7.2016). As discussed also in the literature, I suggest that such features of management add to the basic psychological need of *relatedness* through the feeling of security, making it more likely for initiatives to develop new knowledge to emerge.

Although the systems were characterized by the four features of enabling formalization, the existing informational style of evaluation was not, however, perceived only positively in the case organization. One of the top managers was fairly new in the company and described the project management meetings in the following way (Director E, interview 1.7.2016):

We run these our project [management] meetings a bit too like public servant-like. [...] They are focused like this type of distributing information type of things. [...] People come to there with a filled [project reporting] template to tell that this is where we are at. But there is not much discussion and that disturbs me a lot. [...] We always go through a long list of projects, and there you just sit and the end result is basically nothing without any actions.

Evaluation is in both non-accounting and profit conscious styles delivered in a rather flexible manner. However, the profit conscious style, unlike the non-accounting style, simultaneously applies pressure on the subordinate when it is appropriate and with some care. Indicating that evaluation of projects in the case organization was inclined more towards the non-accounting style, not much appropriate pressures were introduced to the project managers through the processes of evaluation. For instance, one of the project managers noted (Project manager B, interview 16.6.2016):

Like any evaluation here [in the case organization] is not pressuring. [...] There is not like any kind of pressure from higher levels in those terms that I would experience.

In the notable absence of pressures, the informational style evaluation was in the middle management experienced to be more informative than developmental by nature, which does not feed innovative behaviour (cf. Shalley et al. 2004; Zhou 2003; Zhou & Shalley 2003). Although the information exchange between the management and subordinates was constant, making goals and progress toward these goals transparent (cf. Adler & Chen 2011; see also Adler & Borys 1996), it was not due to the current style considered to be always supportive nor constructive by nature. Right kind of pressures according to the profit conscious style of evaluation were desired by the project managers, even though they do not result in any easier job requirements for them (cf. Hopwood 1972a). Overall, the demand level in the case organization was perceived to be too modest. Project managers required more assertive management initiatives.

Follow-up is like a problem here [in the case organization]. I would like more that kind of, like that we would have stricter control, stricter follow-up, and stricter responsibilities. In my opinion it is a bit that everybody is just pottering around with something here. I have that kind of a feeling. Like that leading an organization is not just that everybody is having fun [all the time], when there is a tough situation, then demand something. [...] The demand level, in any level in this organization, is too kind, way too kind. Soft management is also sometimes needed but sometimes also appropriate and strict handling of issues and saying and reminding why we are here. [...] We do have a flexible and good-spirit climate and there is nothing wrong with that but in my opinion, it would need to be more robust. Management should also be seen [in the organization]. (Project manager C, interview 27.6.2016)

Maybe sometimes even a bit too much [personnel has the possibility to work independently]. [...] By that I mean that feedback and directing, in both good and bad, they do not necessarily always happen in a way as they should. (Project manager E, interview 5.7.2016)

On the basis of above, the findings from this study between the project managers and their superiors are suggested to be somewhat consistent with Hopwood's (1972a & 1972b) notions: if a supervisor uses a profit conscious style, the relationship between the manager and subordinate is more favourable than with even a manager using the non-accounting style. This came further forth as for instance one of the project managers was comparing the current situation in the case organization with his former employer, in which right kind of pressures existed according to him. He had experienced such pressures as a positive issue, as something that kept him focused and motivated, and thereby fed innovative behaviour (Project manager A, interview 15.6.2016):

I have experience from another organization [...] the follow up was monthly there – how much was spent; how much was invoiced. Then we discussed about the difference and it was either positive or negative, and if it was negative, you needed to borrow money from the firm to run the project, and then there became interest expenses that were allocated to your project. So, every project was kind of like an own firm. This was in my opinion a very smart and good system. [...] It was not in any way too pressuring, it was more like interesting. It is in some part so that currently we [the case organization] do not

have that kind of systems that would keep me focused and give me some pressure.

Both the non-accounting and profit conscious styles of evaluation have many similarities with the features of enabling formalization, as I interpret them, such as transparency and flexibility. The appropriate application of pressures, however, is a notable difference between non-accounting and profit conscious styles of evaluation. Whereas the non-accounting style can represent an important means of feedback to the responsible subordinate but have low relative importance in the superior's evaluation, the profit conscious style applies pressure on the subordinate when it is appropriate and with some care. Adler and Borys (1996) discuss also about such pressures but they see them only as a feature to encourage the enabling formalization by stating (p. 83): "...the advantages of the enabling logic can be bolstered by the demands of the task environment and notably by the intensification of competitive pressure". Hence, unlike Hopwood (1972a; 1972b) with the profit conscious style, they see such pressures as somewhat complementary to reach supporting type of enabling formalization. In the case organization, the informational and transparent (non-accounting) style of evaluation was in the absence of right kind of pressures experienced as somewhat uncaring by the project managers. This came for instance forth as the project managers discussed the follow-up and evaluation of projects in the organization, and their superiors' role within these processes.

The follow-up [of projects] is more like that we [top and middle management] follow them just because they 'need' to be followed. In my opinion this is a management and demand problem, problem is a strong word but maybe they [top management] just do not bother anymore. [...] Sometimes I have the feeling that nevertheless how the project result looks like [positive or negative], nobody [from the management] says anything about it. That kind of a feeling I do have. [...] Like if we have a project in which there is clear mistakes, so that we suffer and there is financial losses. The discussion of the reasons stands to be missing and it is just concluded [by the management] that this goes this way and "next item". (Project manager C, interview 27.6.2016)

I have the feeling that role of the project supervisor [a person higher in the organization hierarchy] is rather formal. Like there is just the supervisor who only has a signature in some related piece of paper – and that is pretty much it. [...] There could be stronger or like a

more active role in some way. (Project manager B, interview 16.6.2016)

Within the projects, the current follow-up and evaluation processes did not create the feeling for the employees that their work matters to some important group of people, i.e. to the top management. For instance, one of the project managers (Project manager D, interview 27.1.2017) described the relationship between project and top managers to have “a quite a huge gap”. This indicates that the project managers were lacking management attention and connectedness with their superiors, which resulted of them being short of the basic psychological need of *relatedness*, as I interpret it. According to the self-determination theory all the three basic psychological needs, however, must be satisfied for individuals to thrive (and to be innovative), whilst relatedness is especially critical for internalization of values.

The criticality of the basic need of relatedness was also evident in the case organization. As it was not properly supported, the objectives for the daily operations (i.e. the project objectives), which were built through the organizational level goals, were not properly internalized by the members of the case organization. Although the informational evaluation made in an enabling way the goals and progress towards these goals transparent, which according to Adler and Chen (2011, 75) support motivation based on internalization of values, in the absence of right kind of pressures the (innovation) objectives were by the interviewees considered to have relatively a rather small meaning within the members of the organization and this was evident even in the project managers sense of accountability.

The [project] objectives do not have any meaning. Like nothing. Although we see it [that the objective(s) will not be reached], we do not make action on such situation. It is unfortunate. They [negative things] are taken up when they are already huge things. In those situations, we would need something more. (Department manager B, interview 22.6.2016)

Good question who is responsible of them [of the project results] [...] I don't know who else would kind of be the responsible, the project manager in a way but somehow I have the feeling that not much pressure is put on this matter from the top management or higher from the hierarchy. (Project manager B, interview 16.6.2016)

Whereas Adler and Chen (2011, 75) suggest that enabling use of control systems can promote accountability, in the case organization such sense of accountability did not come that strongly through. As the values were not “taken in”, many

of the interviewees noted that while some project managers are more, many are not that interested about achieving the financial results/objectives of their projects (e.g. Director E, interview 1.7.2016; Director C, interview 28.6.2016; Project manager D, interview 29.6.2016). In the daily (development or innovation) operations of the project-based case organization, project managers are nevertheless in a central position as they are leading the project teams, and such lack of internalization of values can have an effect to the other project team members and through different projects to the entire organization. This can eventually create a climate which does not support excitement and enthusiasm that are needed for the development of new knowledge (cf. Sáenz et al. 2009, 34; Nonaka & Takeuchi 1995, 127), and the interviewees noted this to be somewhat the situation in the case organization.

We do like miss something. Here [to the case organization] has born that kind of a climate that it is not that bad if a project for instance goes over the budget. I do not agree with that. That kind of [enthusiasm] is our biggest problem. It is not like a problem originating from the organization, it is just a management problem. Totally a management problem. (Department manager B, interview 22.6.2016)

In principle, nothing matters [for large group of people in the organization]. Especially there, where we should have that motivated and innovative people, there that group of people to whom nothing matters is the largest. This is extremely worrying. (Director E, interview 1.7.2016)

Overall, the basic psychological needs of autonomy and competence existed within the case organization, thereby supporting autonomous motivation and subsequent innovation. Excessive control did not exist in the company nor were there demeaning judgement to hamper the processes of innovation, for instance. Competence was further supported through effectance-promoting communication and the interviewees considered that there is an organization-wide feeling of competence in the company. However, the psychological need of *relatedness*, which is seen centrally important for internalization of values, seemed to be missing within the case organization's middle management. Although the organizational climate was characterised by a sense of trust, the middle management considered top management to be fair and easily approachable, thereby supporting *relatedness* through the feeling of security, connectedness with the top management was experienced to be somewhat missing.

Literature addresses that extrinsically motivated behaviours as such are not typically interesting. The inherent tendency of individuals to for instance seek out

novelty and challenge tends to be absent and therefore, in order for people to perform such actions with (some) passion, extrinsic stimulation of self-determined behaviour is required. The primary reason why people initially perform such (uninteresting) actions lies in the actions of those others to whom people feel (or want to feel) attached or related: the behaviours should be prompted, modelled, or valued by them. As such characteristics were somewhat absent from the middle management's point of view, the organizational values and goals were not properly "taken in" in the middle management and this is argued to effect to their motivational state and enthusiasm needed for the development of new knowledge. Nonaka and Takeuchi (1995) especially emphasize the importance of middle managers in continuous innovation due to their position at the intersection of the vertical and horizontal flows of information. Due to such central position in relation to innovation activities, the lack of motivation and discipline to achieve the organizational goals that are required to develop new knowledge can easily pour down to the lower levels and I interpret that was somewhat of the situation in the case organization. I will next turn in more detail how the lack of relatedness and internalization of goals were considered to hamper the processes to develop new knowledge and how the interviewees perceived that such processes could be enhanced within the organization.

4.3.4 The delicate balance of management practices influencing innovation

Appropriate management involves setting a delicate balance in several environmental factors influencing motivation and subsequent innovation. Whereas clear innovation promoters (or their counterparts as clear inhibitors) such as autonomy and flexibility to create and innovate, easily approachable superiors that according to enabling feature of repair allowed identifying and bringing forth opportunities for improvement, open and transparent organizational climate marked by sense of security and trust that allowed questioning of existing assumptions and beliefs to develop new knowledge, and adequate information systems to share knowledge supported autonomous motivation and subsequent processes of innovation in the case organization, certain more delicate factors were identified to favour them as well. Challenges related to work assignments, in terms of for instance technical challenges, were by the interviewees perceived to be in balance, while the importance of such balance in igniting autonomous motivation was also acknowledged. Goals were internally transparent and implemented within the organization, and thereby provided the foundation for employees to target and challenge themselves through them. Overall, the basic psychological needs of autonomy and competence were supported through these processes in the case organization, while a sense of security added to the need of relatedness.

I suggest that a certain kind of connectedness was nevertheless missing in the organization, and was related to the follow-up and evaluation processes of cybernetic control systems.⁹¹ The imperfections, however, were not related to the availability of information or technical readiness of the systems. Overall, the organization and project level systems were perceived to function well in this respect and the shortcomings were rather related to the actual usage of the systems, as acknowledged also by some of the interviewees.

If you think about the management control systems as an aggregate, we do know really specifically how this is going, what is happening, and from that base we can quite well forecast what will happen. Making conclusions should not be difficult. But in my opinion the systems are maybe a bit better than the user. (Department manager F, interview 4.7.2016)

Some [individuals] in the top management follow like numbers really closely but how do we use the material that the finance department produces to support decision making? Like financial data exists and different kind of data exists but we do not use it in a way as it should be utilized and act on the basis of it. (Director E, interview 1.7.2016)

In order for the systems to be experienced as supportive, the study affirms previous research that considers it to be critical how the systems are used for control purposes rather than the issue to be related only to technical features and design of the systems. The findings support that it is rather the nature of the communication processes surrounding a control system than its technical properties that determines the (motivational) influence of the system.

The basic psychological need of relatedness is in the literature considered to be critical for internalization of organizational goals and values, and the empirical material acquired for this study support such findings. In the somewhat absence of relatedness, the organizational goals were not properly “taken in” by the members of the case organization, and did not thereby ignite their autonomous motivation needed for the activities of innovation. The lack of enthusiasm to achieve these goals was apparent for instance in the project managers’ actions, and such passive behaviour originated from the lack of connectedness with their superiors due to rather allowing management style without much evaluation pressures when they would have been appropriate. For instance, one of the project managers described

⁹¹ Management control systems are seen to play a central role in creating competitive pressures within organizations to innovate and adapt. See e.g. Davila et al. (2009) and Simons (1995).

his actions, or rather lack of actions, in the following manner (Project manager D, interview 29.6.2016):

Here [in the case organization] you have that kind of sleepy feeling. It can be seen in the projects then as well – as you do not have that enthusiasm. Like why would I [as a project manager] demand from people if I can let things to roll on their own weight? This [organization] would need that kind of [enthusiasm].

Adler and Chen (2011, 75) as well as Adler and Borys (1996, 80) note that enabling formalization encourages motivation and innovation based on an internalization of goals and the discipline necessary to reach them. Whereas innovations are important to the case organizations and part of its customer promise, the lack of relatedness was identified to hamper such processes as the employees did not “take in” these organizational values. For instance, the new five-year plan as well as the importance of innovations on an organizational level or the objectives on a project/operative level were not fully internalized by the members of the case company and in the absence of internalized goals, their behaviour was rather passive and the enthusiasm to reach these goals was somewhat missing. With the unenthusiastic behaviour, the interviewees perceived that the members do not have the passion for the development of new knowledge by questioning existing assumptions and processes within the teams and organization but are more satisfied with engaging to prior knowledge.

Such passive engagement to prior knowledge was especially visible in the knowledge spiral mode of externalization – a quintessential mode in knowledge-creation – as the required conversion processes from tacit to explicit knowledge through meaningful ‘collective reflection’ was considered to be to some extent missing in the organization (e.g. Director E, interview 1.7.2016). Although there was a good dialogue and the climate allowed questioning of existing assumptions and processes, certain type of curiosity to question old ways of doing things and to develop new knowledge together did not occur in a satisfactory amount. In the lack of enthusiasm, people (including middle management) were by the interviewees seen to rather take the easier, simple, and unimaginative route with the existing knowledge.

[...] lately there has been a bit more like public servant type carrying of things in this organization. Now you can note more this public servant-like thing, ok this is how it has been done and it is the way as we will always do. (Project manager E, interview 5.7.2016)

I would claim, like in my experience it [not questioning current ways of doing] is in most part just an attitude question – they [part of the employees in the case organization] just don't care. They just approve the [old] habits. [...] They are just not bothered of thinking something new and being critical towards what have been done in the past. (Project manager A, interview 15.6.2016)

They [department managers] are hard-core professionals but sometimes it goes to a situation that we do not jump out from the normal circle and think things in a different way. This [the case organization] is in a stationary mode in that respect. (Director E, interview 1.7.2016)

As the questioning of current processes and the existing solutions in the industry did not occur in a satisfactory amount in the case organization, several middle managers (e.g. Department manager D, interview 29.6.2016; Project manager D, interview 29.6.2016; Project manager C, interview 27.6.2016; Project manager B, interview 16.6.2016) addressed the importance of this kind of collective occasions. Rather than developing new knowledge through IT-systems, these kinds of occasions were seen as the primary way to develop new knowledge within the organization (cf. chapter 3.4.3) and if such occasions would be “forced”, for instance through properly organized evaluation settings with right kind of pressures and constructive information exchange that builds on relatedness, the middle managers perceived that they would serve as source of ideas for change within the engineering value chain (incremental innovation), help in sharing ideas and avoid the repeating of same mistakes between projects, assist in solving problems within projects, and help to create something new during the projects (radical innovation).

The lack of questioning existing assumptions, challenging the status quo and old ways of doing things was especially visible in the development projects, in which incremental or radical innovation, or both of them, should flourish. The case organization had development projects for instance for improvement of internal processes such as how to develop the efficiency and functioning of the different parts within the engineering value chain (incremental innovation) as well as for developing different vessel types, in which especially the fuel/energy efficiency would be better than the current options in the market can offer (radical innovation). Goals to achieve were by the interviewees considered to be in place but the enthusiasm and discipline (cf. Adler & Chen 2011; Adler and Borys 1996, 80) to achieve these common goals were discussed to be missing and as a result, the outcomes of the development works, which should be characterized by new knowledge, were in general seen as rather poor. Innovative employees' auto-

mous motivation, however, need to be managed and several interviewees considered that the lack of (innovative) outcomes of these development project teams derived from inadequate management of them.

When we do development work, nevertheless is it for developing processes, products or services, although in the beginning we put in place schedules and budgets, the respect towards them is somewhat absent. [...] There we [management] have not been sharp enough. [...] A big part of them [development projects] kind of become watered down although we have clear systems that how to follow them and we have processes. It is more a question of attitude. [...] The claim with development projects is often that there is not enough hours to do it so there cannot be development. From time to time when we have had a better year, we have asked that what should be developed and we have given the hours for it. The end result has been every time that the hours are used but there is no development, they are just consumed to something or than the hours are not even used. Resources are not the problem; it is still there the problem that the person needs to want to develop him-/herself. (Director C, interview 28.6.2016)

[...] as we were viewing the development hours, how many hours were consumed last year [a lot according to the interviewee], I do not know anything what have we achieved with those hours. [...] There should be like some kind of a supervising commission, somebody who would challenge that product development team. Hey now you have one and a half months to do it [the project] and then you come and present it and then happens this. Then we either continue or if you have not got anything reasonable ready... [...] But in my opinion these kinds of pressures there has not been at all. [...] Like no one at the management question [the teams] and this is not a one-time case. The whole process has been lacking supervision. [...] Bad management. It is nothing else. (Project manager D, interview 29.6.2016)

Although the fundamental resources for innovation activities such as the required time and adequate information systems, informal innovation structure characterized by flexibility as well open and trusting organizational climate, and existing domain knowledge provided a well-established foundation for innovation activities in the case organization, in the absence of right kind of pressures and thereby the basic psychological need of relatedness, the enthusiasm to question

existing assumptions and beliefs, and to develop new knowledge, was somewhat missing. It is, however, the task of the management to integrate human assets and the surrounding innovation structure. This way individual variables should be aligned with organizational purposes, thereby pushing them in certain “predictable” directions.

In the case organization, the (financial) goals and progress towards these goals were in an enabling way disclosed to the members (cf. Adler & Chen 2011, 75). Despite of the enabling features, the interviewees nevertheless considered that the goals do not appropriately challenge nor direct attention to certain “predictable” directions within the company. To somewhat inconsistent with their actions, the motivational value of pressures through for instance goal setting and more assertive follow-up of these goals was, however, recognized within the top management. This relationship was seen to be driven by autonomous forms of motivation (referred as self-critique) rather than by the controlled forms, and ultimately lead to the development of new knowledge. This came for instance apparent as one of the directors was discussing about the value of pressures in the development of new knowledge through financial goals and competition, and about their role within the current organization in comparison to the past when the company was smaller than nowadays (Director C, interview 28.6.2016):

In the company level but also in the project level it should be the same. The attitude towards work should be that something [profit] should always remain. That is like the big thing and there is that kind of difference. We were for a long time a relatively small company and the guideline in everything we did was that profit needs to be done. Nevertheless, was it a project, department, or company level. It was clear. It was that kind of self-critique. [...] There was competition between the departments, like which department will be the best and who will do the best result. In the project level it was exactly the same. That we have lost a bit. [...] Getting through that kind of way of thinking, it is which in the end develops the operations and is the main forward going force through which operations start to develop and you start to look optional ways of doing things.

Within the members of the case organization, by challenging and directing attention of the employees, goal specificity and an emphasis on output were perceived to be positively related to development and innovation. In more or less absence of related pressures, I argue that the objectives disclosed in an enabling way did not, however, encourage motivation and subsequent innovation based on this kind of internalized discipline necessary to reach them, as emphasized Adler and Borys (1996, 80; see also Adler & Chen 2011; 76). The issue was not that goal

setting was too loose in the sense that goals would not have been in place nor that the progress towards these goals would have not been followed in an informational way, but rather their motivational value was undermined during the projects and fiscal year with the somewhat distant follow-up without much pressures in relation to these goals. Literature addresses that managers can nevertheless reap many of the benefits of the control systems by emphasizing factors which they attempt to measure without this resulting to unfavourable consequences for the organization such as emotional drawbacks (e.g. lack of motivation) or defensive behaviour. Consistently, many of the interviewees considered that the top management should “sharpen” the operations by being more robust and by introducing some frequent, right kind of “elegant” pressures within the organization.

I do feel that certain type of leadership has crumbled. Like sometimes you would just need to say that work guys. [...] Like in every area we should sharpen this thing [the operations]. [...] It starts from the top of the organization, they should just be more discipline in some way, in an elegant way. (Project manager D, interview 29.6.2016)

In my opinion we should sharpen this a bit [the operations overall]. It is purely a management issue. (Director E, interview 1.7.2016)

Overall, managers were considered to use the systems in a somewhat distant manner. Although the cybernetic control systems were observed to be flexible, informative, and transparent by nature, due to the absence of right kind of pressures the interviewees described them at the same time in a negative way as being in the “background” in the organization, as something that do not create enough for instance constructive discussion, questions, or debate between top and middle management (e.g. Department manager D, interview 29.6.2016; Department manager A, interview 21.6.2016). Instead, more prompting and “nurturing” management through evaluation was desired by the middle management.

Consistent with these findings of this study, the interviewees perceived that through such characteristics, the top management could certainly add to the connectedness between different groups with the organization and thereby “sharpen” the company’s operations. This kind of increased energy and concentration are then, according to autonomous motivation perspective, likely to result in to higher levels of innovation (cf. Amabile 1996a). In-line with the autonomous motivation perspective, the interviewees confirmed in the second phase interviews that more assertive and closer management with right kind of pressures would in their opinion increase excitement and focus within the organization, and through such attrib-

utes enhance the possibility of subsequent innovation (Department manager A, interview 30.1.2017; Project manager D, interview 27.1.2017; Department manager B, interview 26.1.2017; Project manager A, interview 23.1.2017).

If we [the case organization] want to like pursue towards certain objective, it would be important that they [management control systems and their indicators] would be emphasized much more. [...] I would believe that it would give more pressure [...] and it would sharpen these operations. (Department manager D, interview 25.1.2017)

Signs of such “sharpening” of operations could be noticed within an internal competition that the top management organized for few of the departments during the collection of empirical material. The purpose of the participating teams was to create a vessel of the future, in which innovative solutions naturally play a big part (case organization’s internal documents). The teams had specific time deadlines and hour budgets to finish their projects, while some of the top managers acted as the guardians and judges of the competition, thereby evaluating the winning team from the participating groups. I suggest that the top managers’ supervision role with focus on the initiative and with the evaluative aspect added to the sense of connectedness within the participants. Such “nurturing” management with the established regulations of the competition then emphasized the meaning of hour budgets and time deadlines, and these together with the presence of competitive others did create right kind of pressures and challenges to the teams. The entire initiative and especially the end results were seen positively within the organization (e.g. Department manager D, interview 29.6.2016; case organization’s internal documents). The teams were perceived as enthusiastic and excited about the task and as result of that excitement, there were outcomes but most importantly, innovative outcomes, thereby supporting the findings of this study. New solutions were brought to existing vessel types, solutions that for instance improved the fuel efficiency and/or the ecological footprint of these different types of vessels.

5 DISCUSSION

5.1 Features of enabling formalization supporting motivation and innovation

The notion of enabling bureaucracy (Adler & Borys 1996; see also Adler & Chen 2011) provided the primary theoretical framework for studying the relationships between cybernetic control systems and innovation for this doctoral thesis as enabling formalization, through the four features of repair, internal transparency, global transparency, and flexibility should guide organizations to attain creativity and innovation. These four features were reflected within the case organization's cybernetic control package, including financial measurement system, budgets, hybrid measurement system, and non-financial measurement system. The findings indicated that the four features were evident in the case organization's cybernetic control package, while the interviewees experienced the systems also technically adequate to support further management actions.

However, at the same time the case organization was experiencing challenges with innovation. According to Amabile (1998, 78; 1988, 130–134) and her experimental research (see Amabile 1983), (individual) innovation is a function of three components in any particular environment, namely domain knowledge, creative-thinking skills, and motivation. Whereas the innovation structure – informal and formal – compose the work environment for the activities of innovation, domain knowledge and creative thinking provide the foundation for such activities. Motivation, however, determines what people will actually do and therefore, no amount of domain knowledge or creative-thinking skills can compensate for a lack of appropriate motivation to perform an activity (cf. Amabile 1998, 78). By considering the situation in the case organization in regard to the supporting structure and to these three components of innovation, the findings indicated that the related challenges did primarily stem from lack of motivation and enthusiasm within the employees.

Because of such findings, concepts from the psychology literature were brought together with the formalization aspect (cf. Adler & Chen 2011) to further elaborate the management control systems' relationship with the motivational orientations that existed in the organization. Self-determination theory – a concept from the psychology literature – emphasizes the importance of people internalizing (i.e. “taking in”) values into their own for autonomous motivation to be evident and typically, lack of motivation originates from a failure of such process. The theory

recognizes that internalization and subsequent autonomous motivation are most likely to occur when individuals experience support for the three basic psychological needs of autonomy, competence, and relatedness. These basic psychological needs were then reflected through different management practices that are closely related to cybernetic control systems, with which literature discusses that management is able to fulfil these basic needs of their subordinates for innovation to flourish. These management practices included different approaches to support autonomy such as freedom to fail and to work independently, practices to enhance the feeling of competence such as effectance-promoting feedback as well as goal setting and demanding work tasks that provide employees with challenges, and practices to fulfil the need of relatedness such as appropriate evaluation and follow-up processes as well as the creation of an atmosphere characterized by a sense of security, in which people are able to voice their own concerns and feel that managers are easily approachable, for instance.

By reflecting these notions from the psychology literature, the evidence acquired for this thesis indicates that the four features of Adler and Borys (1996) do enable many of the issues required for autonomous motivation and subsequent innovation. Through such evidence, I came to appreciate many of the findings of Adler and Borys (1996). First of all, the basic psychological need of autonomy came strongly forth within the case organization, thereby fostering innovation by granting individuals the freedom to create and innovate (cf. e.g. Nonaka et. al. 2000; Amabile 1998). Excessive control was not apparent but people rather had autonomy and flexibility in performing their daily tasks. They were able to make decisions and innovate in relation to their functions and the interviewees considered related failures to be just a normal part of operations, and these practices to support autonomy were also discussed to enhance the commitment levels of the members of the organization (cf. Adler & Chen 2011; see also Pfister & Lukka 2017).

Secondly, the evidence suggests that enabling features helped in creating an “open” and trustful working environment in which the management style of the case organization’s top management was considered to be sincere towards employees. Employees did not consider themselves to be poorly informed but rather that there was transparent and effectance-promoting communication by the management. The interaction between the managers and subordinates was open as managers could be easily approached, allowing equal discussions with the superior without demeaning judgement of ideas to develop new knowledge, for instance. Further, the available information enabled discussion and helped in creating a climate of trust. People felt safe sharing their knowledge, which is in the literature considered as an important prerequisite of innovation. Taken together, such (globally) transparent communication and open interaction practices without demeaning

judgement supported the basic psychological need of competence, while simultaneously to some extent adding to need of relatedness through the feeling of security.

Thirdly, the enabling features provided visibility within the organization and within the systems. Such transparency allowed identification of development or repair efforts, and thereby provided employees with opportunities to improve processes (i.e. incremental innovation) related to their tasks. Taking adequate ideas forward to develop for instance new products (i.e. radical innovation) or processes was not restrained by management and I interpret that this added to the employees' basic psychological need of autonomy. The existing transparency also assisted middle managers to acknowledge the placed objectives and progress towards them. Such targets provided a foundation for managers to challenge their subordinates and for the employees to challenge themselves. Whereas providing such challenges is in the literature considered to be important to support the basic psychological need of competence and motivation overall, providing such challenges is perceived to be also as one of the most efficacious way to stimulate innovation on an individual level.

As a result, the four features of Adler and Borys (1996) supported innovation and its critical component of motivation in several ways in the case company. Autonomy was strongly present in the organization, while the employees also felt competent in relation to their tasks. They for instance felt confident in bringing up their concerns and in making decisions in relation their daily tasks, thereby advancing the development of new knowledge and the achievement of the organizational (innovation) goals. At the same time, however, the interviewees discussed that people are not that enthusiastic about achieving these organizational goals, and this was seen to hamper the processes to develop new knowledge. The basic psychological need of relatedness is considered to be critically important for internalization of goals, and I will next discuss it in detail.

5.2 The importance of basic psychological need of relatedness for internalization of organizational goals

In the case organization, the organizational atmosphere came forth as open and trustful, whereas the interviewees considered that management was easy to approach and that their management style was fair towards employees. These findings were supported by the results of the personnel survey conducted by a third party (case organization's personnel survey 2016) and they were evident also during the interviews for this thesis as none of the interviewees were concerned if the discussions for this thesis were anonym or not. I suggest that such characteristics

supported the basic psychological need of relatedness through the feeling of security.

To adequately support the basic psychological need of relatedness, the need to feel belongingness and connectedness with others should, however, be also fulfilled. The primary reason why people initially perform (possibly uninteresting) actions is because the behaviours are prompted, modelled, or valued by others to whom people feel attached or related – in an organizational setting often the managers. In the case organization, such lack of connectedness with the top management came apparent during the discussions with the middle management. The middle managers did not feel that there were proper initiatives of management from their superiors, in the sense that that the management would have been interested enough what is happening at the operative level in terms of innovation activities or projects' results, for instance. More active role of the top management was desired by them and in the lack of it, the fellowship between top and middle management was considered to be missing.

Such management follow-up and support are directly related to cybernetic controls as a straightforward feedback loop is represented in them through the characteristics of measurement and relative evaluation. By reflecting these systems and related processes, the lack of connectedness was traced back to the existing follow-up and evaluation styles in the case organization. Despite the existence of the four enabling features in the case organization's cybernetic control package, I suggest that these systems with relative evaluation and follow-up processes were not in 'balance'. It is yet important to notice that supporting the basic psychological needs is an act of delicate balance and internalization of values can be fragile if one of these needs goes unfulfilled (cf. Pfister & Lukka 2017). Whereas people are more likely to adopt activities that they feel competent with respect to those activities, they also must transform the values into their own and synthesize their meaning with respect to their other goals and values, and support for autonomy allows individuals for this transformation to occur. At the same time, there should be a sense or relatedness through 'nurturing' management, which should not, however, abrogate the individuals sense of autonomy through too close monitoring of their actions.

Although the cybernetic control systems in the case organization were informational, through which the employees identified the placed objectives and received informational feedback for following-up their progress in relation to these objectives (cf. Adler & Chen 2011, 75), the evaluation and follow-up style of the top management was by the middle management seen as somewhat distant. Whereas Adler and Borys (1996) discuss about competitive pressures but see them only as a feature to encourage the enabling formalization by stating (p. 83): "...the advantages of the enabling logic can be bolstered by the demands of the task envi-

ronment and notably by the intensification of competitive pressure”, in the somewhat absence of right kind of positive pressures by for instance questioning existing assumptions, challenging the status quo and old ways of doing things, in the case organization the top management’s informational style of evaluation and follow-up was experienced as uncaring and as a style that did not create the middle managers’ enough the feeling that their work matters to the organization or to some important group of people (i.e. to their managers), and thereby builds the fellowship required for the basic psychological need of relatedness.

Relatedness, the need to feel belongingness and connectedness with others, is in the literature considered to be centrally important for internalization of values and the findings from this study support these earlier notions. Whereas the basic psychological needs of autonomy and competence were supported in the case organization, the findings suggest that the lack of relatedness hampered the internalization of organizational goals and values. As the evaluation and follow-up style of the top management was in the lack of positive pressures experienced as distant (i.e. not creating connectedness between top and middle management), the middle managers acted also somewhat distantly and passively towards these acknowledged and followed organizational goals; hence they had not transformed the goals into their own and synthesized their meaning with respect to their other goals and values. This was evident for instance in the projects managers’ behaviour as they sometimes passively let things to roll on their own weight, instead of being initiative and active to achieve these organizational (innovation) goals. Respectively, the interviewees considered that the case organization is to some extent overall missing the enthusiasm to achieve these organizational goals (e.g. long-term objectives) and the evidence suggests that the origin for such passiveness was in the inadequately fulfilled need of relatedness. The management style was in the middle management experienced as somewhat uncaring and too “allowing”, as something that did not create for them enough the feeling that their work matters to their superiors.

Whereas Adler and Chen (2011, p. 75) state that when diagnostic control systems (defined as e.g. budgets, goals and objectives systems, and project monitoring systems) “...are used in an enabling way, they can make transparent the organization’s goals and progress towards these goals, thereby fostering mutual commitment and inducing identified motivation...”, Adler and Borys (1996, p. 80; see also Adler & Chen 2011, 76) state that enabling type of formalization encourages motivation “...based on an internalization of both goals and of the discipline necessary to reach them”. The findings of this thesis support the encouragement of motivation through internalization of both goals and of the discipline necessary to reach them but the findings provide counterevidence in terms of the four features of the framework: they do not seem to be always sufficient to achieve such internalization of goals and the discipline necessary to reach them.

Despite the existence of the four enabling features in the case organization's cybernetic control package, employees' motivation was not adequately encouraged through these systems – in a manner that they would internalize the organizational goals and would have the discipline necessary to reach them. The lack of internalization of these organizational goals and the discipline necessary to reach them was also discussed by several of the interviewees. Many of them for instance noted that while some of the project managers are more, many are not that interested about the (financial) results of their projects. Such lack of internalization of organizational goals was then identified to affect the activities of innovation, to which I will turn next.

5.3 Internalization of organizational goals and innovation

Adler and Borys (1996, p. 79) state that “the innovation goals of these organizations are supported by their enabling organic features...”. In the case organization, despite the enabling features, the current management style without right kind of evaluation pressures on subordinates did make people feel that not enough attention is paid to their work, resulting to a sense of lack of relatedness with the management. The basic psychological need of relatedness, however, is critical for internalization of goals and values, and the evidence acquired for this study suggests that its shortage hampered such processes of internalization in the case company and thereby advanced employees' passive, unmotivated behaviour, which is not beneficial for a knowledge-intensive organization where there should exist enthusiasm and passion for development and new knowledge (cf. Adler & Chen 2011; Adler & Borys 1996).

Overall, the interviewees considered personnel to be somewhat unenthusiastic to reach the organizational (innovation) goals and this lack of enthusiasm to achieve these objectives was often referred as the lack of will to develop him- or herself or missing self-criticism of one's own actions in achieving the organizational goals. However, if the individual does not internalize these organizational (innovation) goals into his/her own and synthesize their meaning with respect to his/her other goals and values, from the management's or from the company's perspective it can seem that the individual(s) might not have the will and the needed enthusiasm to develop him-/herself towards these organizational goals, although the individual(s) might otherwise have the will to develop his or her capabilities towards some other goals that him or her consider worth of pursuing.

The existing passive behaviour was during the interviews often referred as “public servant type of operations” by the interviewees and in the project-based case organization it was evident for instance within the development projects, in which incremental or radical innovation, or both of them, should flourish. Whereas the

development projects were followed and had objectives in place such as the development of the efficiency and functioning of the different parts within the engineering value chain (incremental innovation) and the development of different vessel types in terms of for instance the fuel/energy efficiency (radical innovation), the interviewees noted that they become often “watered down” without achieving much of these objectives or results, overall. Although the members of the organization felt competent in respect to their own fields of expertise, had autonomy in performing their tasks, and could bring up new ideas without the fear of failures or demeaning judgement, the interviewees considered that a certain kind of curiosity and questioning old ways of doing things was somewhat missing in the organization. Members of the case organization were seen to be more engaged to using prior knowledge rather than to be enthusiastic to achieve these innovation goals and to together challenge the prior assumptions and beliefs that existed within the organization/industry. I argue that this was due to the inappropriately internalized organizational goals.

Such passiveness and engagement to prior knowledge was especially visible in the knowledge spiral mode of externalization – a quintessential mode in knowledge-creation – as the interviewees noted that the required conversion processes from tacit to explicit knowledge through meaningful ‘collective reflection’ were to some extent missing in the organization. People were not considered to take much “extra steps” to achieve the organizational (innovation) goals but were (including middle management) seen to rather take the easier, simple, and unimaginative route with the existing knowledge. By reflecting the prior innovation success stories in the organization, the interviewees considered that these types of co-operative initiatives through ‘collective reflection’ had played an important role for such processes of innovation to take place then and were perceived to do so also in the future. Whether it would be for developing the functioning of the different parts within the engineering value chain (incremental innovation) that requires a close co-operation between different sections of the organization for newly created knowledge and existing knowledge to be ‘networked’, or for improving for instance the fuel/energy efficiency of a vessel design in which representatives from different areas of expertise such as hull design, propulsion systems, and weight control must co-operate closely in order to produce radical innovations and make the different areas to function superbly with each other.

This type of meaningful ‘dialogue’ between individuals is often required for converting the individuals’ tacit knowledge into something new that has value. However, despite the existence of a good general dialogue between the members of the organization and the resources to develop new knowledge such as adequate information systems to share knowledge and the required time for the activities of innovation, the interviewees perceived that these kinds of occasions to together

question prior knowledge and old ways of doing things did in the absence of required enthusiasm occur too seldom by the initiatives of the employees, although they were seen as the primary way to develop new knowledge within the organization. Rather, such meaningful 'collective reflection' was during the interviews considered as something that would need to be "forced" in order for the conversion processes from tacit to explicit knowledge to create new knowledge to take place.

Following this, many of the interviewees perceived that the missing enthusiasm to achieve the organizational (innovation) goals derived from inappropriate management of the employees' motivational state. During the discussions, the interviewees argued that the case organization's management should "sharpen the operations" and in this, for management to show more interest and to further challenge the teams, the introduction of "elegant" management generated positive pressures was considered to be in an important role, in order to create more excitement within the employees and for the employees to take these goals into their own. This type of goal clarity and enthusiasm as well as discipline to achieve these goals through right kind of positive pressures was a major issue that the interviewees considered that would help to develop the operations (incremental innovation) and new knowledge (radical innovation), and when comparing with the past when the company had been more successful in the activities of innovation, exactly such characteristics were according to the respondents currently less evident within the organization.

6 CONCLUSIONS AND EVALUATION OF THE STUDY

6.1 Conclusions regarding management accounting research

This doctoral thesis has explored the interplay between cybernetic control systems and innovation. The notion of enabling bureaucracy (Adler & Borys 1996; see also Adler & Chen 2011) provided the primary theoretical framework for studying these relationships as according to Adler and Borys (1996, 79) “The innovation goals of these organizations are supported by their enabling organic features...”. Through the four enabling features of repair, internal transparency, global transparency and flexibility, the framework of enabling bureaucracy should guide organizations to attain creativity and innovation. By reflecting these four enabling features within the case organization’s cybernetic control package, the findings indicated that the features were evident in it, whereas the systems were also technically adequate to support further management actions.

At the same time, the case organization was experiencing challenges with innovation. Adler and Borys (1996, 77) submit that positive attitudinal/motivational outcomes should be expected in organizations with high or low degree of formalization as long as the type of formalization is enabling. Despite the fact that the four enabling features existed within the case organization, the challenges in relation to innovation were discovered to primarily stem from the lack of one of the three components of (individual) innovation – motivation/enthusiasm within the employees – which determine what people will actually do. Because of such findings, concepts from the psychology literature were brought together with the formalization aspect (cf. Adler & Chen 2011; Adler & Borys 1996). Self-determination theory – a concept from the psychology literature – emphasizes the importance of people internalizing (i.e. “taking in”) values into their own for autonomous motivation to be evident and typically, lack of motivation originates from a failure of such process. The theory recognizes that internalization and subsequent autonomous motivation are most likely to occur when individuals experience support for the three basic psychological needs of competence, autonomy, and relatedness. These basic psychological needs were then reflected through different management control related practices that should help management to create a social environment (i.e. a work environment) in which innovation flourishes (cf. e.g. Pfister & Lukka 2017).

By reflecting these notions from the psychology literature, I came to appreciate many of the findings of Adler and Borys (1996) as well as Adler and Chen (2011) as the four enabling features supported innovation and its critical component of motivation in several ways. Autonomy and flexibility to create and innovate, easily approachable superiors that allowed identifying and bringing forth opportunities for improvement, and open, transparent, and secure organizational climate that allowed questioning of existing assumptions and beliefs to develop new knowledge came clearly forth within the organization, for instance. However, at the same time counterevidence regarding the postulated associations between the four specific characteristics of Adler and Borys (1996) and innovation as well as motivation was obtained.

Whereas Adler and Chen (2011) call for a better understanding of the motivational underpinnings of how control and innovation can co-exist, according to both Adler and Borys (1996) as well as Adler and Chen (2011) enabling formalization with its four features should encourage motivation through internalization. Adler and Borys (1996, 80; see also Adler & Chen 2011; 76) note that enabling formalization encourages motivation based on identification, or in their words, "...based on an internalization of both goals and of the discipline necessary to reach them" (p. 80). In a similar vein, Adler and Chen (2011, 75) state that when diagnostic control systems (defined as e.g. budgets, goals and objectives systems, and project monitoring systems) "...are used in an enabling way, they can make transparent the organization's goals and progress towards these goals, thereby fostering mutual commitment and inducing identified motivation...". In the case organization, although the organizational goals and progress towards them were in an enabling way disclosed and identified by its members, the findings indicate that the organizational goals were not properly internalized.

This thesis is built on the works of Adler and Chen (2011) and Adler and Borys (1996). While the findings support their view about the encouragement of motivation through internalization of both goals and of the discipline necessary to reach them, the findings provide counterevidence in terms of the four features of the framework: they do not seem to be always sufficient to achieve such internalization of goals and the discipline necessary to reach them. I suggest that in the case organization, the failure in the internalization of values was associated with the basic psychological need of relatedness. Such connectedness is centrally important for internalization processes and to support it, cybernetic control systems can play an important part as a straightforward feedback loop is represented in them through the characteristics of measurement and relative evaluation (cf. Groen et al. 2017, 55–56, 62).

Despite the existence of the four enabling features in the case organization's cybernetic control package, the lack of connectedness was traced back to the ex-

isting follow-up and evaluation styles in the case organization. The findings indicated that these systems with relative evaluation processes and pressures did not sufficiently support employees and due to this “imbalance”, the internalization of the placed (innovation) objectives was not adequate but rather had little of disciplinary or challenging effects within the organization (cf. Adler & Chen 2011, 75; Adler & Borys 1996, 80). This was then evident within the enthusiasm levels and activities of innovation in the organization: rather than being excited to develop new knowledge, the interviewees perceived people to be more satisfied with passively engaging to prior knowledge.

While Jordan and Messner (2009) emphasize that flexible use of management control systems can “easily” give way to control and evaluation focus that leaves operational managers with few possibilities other than to try and “make the numbers”, this study provides evidence that flexibility can as “easily” give way also to lack of control and evaluation. Evaluation and follow-up are clearly acts of delicate balance and in the case organization’s cybernetic control systems such balance did not seem to exist. The findings from this study are thereby inconsistent with the results of Ahrens and Chapman (2004) as well as Jørgensen and Messner (2012) who found the four enabling features of Adler and Borys (1996) to create a somewhat of a balance (or “harmonious configuration”) between control and freedom, and between efficiency and flexibility in their case settings. Rather, in the case organization the middle management desired more management initiatives in order for these contraries to be in balance. The systems were not perceived only positively by the middle management but contrary to the goals of enabling formalization fostered some dissatisfaction, limiting thereby also innovation since employees may not have the necessary motivation to contribute to the complex non-routine tasks that constitute innovation, as noted by Adler and Borys (1996) in case of such dissatisfaction.

Because of the rather purely informationally focused nature of the systems with little evaluation pressures, management came forth to employees as somewhat uncaring, as a group that is not paying enough attention to their work nor is that interested what is going on in the “production”. Adler and Borys (1996, 83) discuss competitive pressure but they see it only as a feature to encourage the enabling formalization by stating: “...the advantages of the enabling logic can be bolstered by the demands of the task environment and notably by the intensification of competitive pressure”. However, evidence acquired from this case study support that rather than competitive pressure to be only a force to encourage enabling logic, management initiative to introduce such pressures in the right amount may be necessary to achieve a *supporting* type of enabling bureaucracy. On the basis of these findings, *it is suggested that the four features of enabling bureaucracy on their own represent a necessary but not a sufficient condition to support employees’*

motivational orientations and subsequent activities of innovation (cf. Mackie 1974; 1965).⁹²

The findings from this study do indicate that more assertive management intervention is required to support the basic psychological need of relatedness than what comes across through the four features of the theory of enabling bureaucracy. Although the top managers in the case organization were easy to approach, open with communication, and seen fair towards employees, they were at the same time, however, considered as somewhat distant. The usage of the cybernetic control systems was by the middle management experienced as rather *allowing* than *supporting* and consequently, they were lacking connectedness with the top management – the group whom they should feel attached or related to. Thereby, in order to sufficiently promote the process of internalization in knowledge-intensive organizations, management initiative to introduce right kind of pressures is proposed to be an important quality of enabling systems, if subordinates sufficiently understand the systems and their usage, i.e. they are internally and globally transparent. It is argued that the four features of the concept of enabling formalization do not, however, take this quality properly into account. As called for by Adler and Chen (2011), this study can be thereby perceived to add to our understanding of the motivational underpinnings of how control and innovation can co-exist by providing evidence of the value of right kind of pressures through control systems and how management could use control systems to better support the psychological need of relatedness, which is highly important for internalization of values and therefore for autonomous motivation and subsequent activities of innovation (cf. Adler & Chen 2011; Adler & Borys 1996).

By emphasizing the importance of stronger management intervention, this study is consistent with some of the prior studies of enabling bureaucracy that instead of motivational perspectives found management intervention to be important in creating structure within organizations.⁹³ Jørgensen and Messner (2009) discussed management intervention in terms of the enabling feature of repair. They argued that satisfactory adaptation of a control system in a situation of organizational or

⁹² An account of the complex relations between necessary and sufficient conditions in causality is presented by Mackie (1974; 1965). Mackie (1974; 1965) stresses that effects have typically a “plurality of causes”, meaning that a certain effect can be brought about by a number of distinct clusters of factors. These relations are formulated as the so-called INUS-conditions which can be defined as follows: A is an INUS-condition of a result P if and only if, for some X and for some Y, (AX or Y) is a necessary and sufficient condition of P, but A is not a sufficient condition of P and X is not a sufficient condition of P. Hence, A is an insufficient (because of X) but necessary part of an unnecessary (because of Y) but sufficient condition (AX) for P. See also Lukka (2014).

⁹³ Similar ideas outside the studies of the theory of enabling bureaucracy are presented by Mundy (2010).

strategic change may not always be possible by means of employees' own repair efforts, but may require top-down management initiative and intervention. In turn, Chapman and Kihn (2009, 166) found out that whilst flexibility is an important part of the enabling approach to control, it might need some supporting structure in order to lead to positive outcomes.

Similar to Jørgensen and Messner (2009), the findings indicate that the employees' own repair efforts may not be enough for employees to view the systems positively (cf. Adler & Borys 1996). More management initiative and intervention may be required and according to the findings, they seem to be important not only in situations of organizational or strategic change, but also in rather stable situations. With the inadequate management support in which behaviours were not valued nor prompted enough, the case organization was in the "normal" situation seen to be somewhat "drifting" (i.e. lacking structure beside the flexibility features). The findings suggest that for such management interventions to create better structure, cybernetic control systems with relative evaluation might provide an adequate tool (cf. Hopwood 1972a, 173). After all, accounting data is often the most important formal source of information in an organization (Hopwood 1972a, 174), while performance evaluation is considered as an integral part of any job (Zhou & Shalley 2003, 182; cf. Green & Welsh 1988, 289). Management intervention through right kind of evaluation pressures may be therefore a way to add to the supporting structure needed to reach the positive outcomes of flexibility (cf. Chapman & Kihn 2009; see also Henri 2012), as well as to enhance the required relatedness between managers and their subordinates to ignite autonomous motivation and subsequent innovation.

6.2 Evaluation of the study

External validity is often claimed to be one of the most important criterion imposed for scientific research results (see e.g. Modell 2005). Whereas external validity is associated with the generalizability of the findings, internal validity is concerned with the accuracy of the results, i.e. their credibility (Modell 2005, 234–236).⁹⁴ In case studies such as this one, Ruddin (2006, 804) argues that instead to achieve generalization, the main mission of a researcher is to strive to illustrate the properly studied case, and in a way that captures its unique features. Consistent with Ruddin's (2006) position, Flyvbjerg (2006, 228) perceives generalization to be considerably "overvalued as a source of scientific development whereas 'the force of example' is underestimated".

⁹⁴ McKinnon (1988, 36) addresses that in general validity of a research is concerned with the question whether the researcher is studying the phenomenon she or he is supposed to be studying.

Ahrens and Chapman (2006, 832) note that in qualitative field studies matters of validity and reliability cannot be sensibly distinguished. This makes reliability another criterion that is commonly associated with scientific research results, and it is concerned with the question of whether the obtained data can be relied on. If the data is trustworthy and free of ‘accidental circumstances’, the reliability of a study is appropriate (McKinnon 1988, 36). For these two commonly associated criteria for scientific research results, McKinnon (1988, 37) has recognized four main types of threats in field studies:

- observer biases
- observer-caused effects
- complexities and limitations of the human mind, and
- data access limitations.

Observer biases are concerned with the researcher’s selective perception and interpretation, and potential for them is present during a study for instance in the process of observing actions and behavior as well as in the formal interviews. With observer-caused effects the observer’s presence changes the phenomenon under study. Like the researcher, the subjects also have their own sets of biases that shape their perceptions and opinions and therefore, the researcher need to be able to properly recognize the complexities and limitations of the human mind. Lastly, data access limitations may be caused by inhibiting the researcher’s access to certain events, people or internal documents as well as by limiting his or her time in the study context (McKinnon 1988, 37–39).

For a researcher to overcome these threats, time spent and social interaction in the research context as well as the usage of different data collecting methods on the phenomenon, i.e. the technique of triangulation, are considered important (McKinnon 1988; see also Hammersley & Atkinson 2007, 183–185; Lincoln & Guba 1985, 300–301, 305). Such processes should help in achieving the overall purpose of the research, which is to reach the true meanings of the actors’ behavior and actions, free of biases originating either from the subjects or the researcher him-/herself.

Well before the start of this study I worked in the case organization for a period of two years.⁹⁵ Through the prior employment, I had spent a good amount of time in the company and was therefore to some extent acquainted with the organization and with its members (cf. McKinnon 1988; see also Lincoln & Guba 1985, 300–301). This enabled me during the study to keep continuous contact and informal discussions with the members of the case organization, which helped me to better reach the true meanings of the actors’ behavior and actions.

Prior and during the study I worked in different subsidiaries or affiliated companies of the case organization, while most part of the collection of the empirical

⁹⁵ The researcher worked in the case organization until April 2013.

material I was working in another country in one of the affiliated companies. However, due to the past employment, I was in the case organization experienced more as a colleague than an external observer (cf. McKinnon 1988; Hammersley & Atkinson 2007, 63). This came forth for instance in the interviews in which the atmosphere and interaction was open and the interviewees did not hesitate to take up negative issues or give critique. They were all without any doubts willing to participate, which resulted into fruitful discussions and absorbing quotes. I consider this to be important for my interpretive research view; to convince the reader but also to bring the storyline “alive”.

Due to the (past) relationship with the organization, I had a direct connection to the management. This enabled access to internal documents, events (e.g. meetings) and people (cf. McKinnon 1988; Lincoln & Guba 1985, 305), whilst I was also given access to the results of a personnel survey conducted by a third-party. This can be seen to add a quantitative element to the usage of different methods (cf. Modell 2005) as the survey provided quantitative information about the entire organization in terms of for instance commitment levels, trust towards management, and overall work satisfaction. At the same time, it provided detailed information about the middle management and different departments, for instance. Such mixed methods research offered a means to understand the complex reality through deeper, broader, and more illustrative description of the phenomenon, since a single method cannot capture reality in all its aspects (Hurmerinta-Peltomäki & Nummela 2006, 452; Dubois & Gadde 2014, 1282).

In abductive research processes the emphasis on the checking of the accuracy of data through triangulation is not seen to be the main issue. Rather, the multiple sources of triangulation should contribute to revealing new dimensions of the research problem (Dubois & Gadde 2002, 556). This, however, often leads the researcher to feel that all these new empirical dimensions are ‘so interesting’ that they need to be shared with the reader, and due to such characteristics of case studies, lack of selectivity has been considered as a common weakness in them (Dubois & Gadde 2014, 1282; Siggelkow 2007, 23). To avoid this pitfall, counterfactual conditionals together with contrastive thinking were employed throughout this study to focus the attention on particular potential emerging explanatory factors, instead of some others (cf. Lukka 2014, 563–564; Lukka & Modell 2010, 465–466; Siggelkow 2007, 23). For instance, in explaining the lack of innovation, the focus was through the application of counterfactual conditionals eventually on management practices affecting autonomous motivation, instead of for example on processes increasing the knowledge levels within the organization such as training or knowledge transfer or on incentive systems promoting controlled or undermining autonomous forms of motivation. However, to have such clear focus, the component of motivation and especially its autonomous forms were prior recognized as the origin of the challenges with innovation, instead of the existing knowledge

levels within the organization, for instance. The purpose was to build a coherent storyline in which factors included in the various stages of analysis do not come ‘out of the blue’ but are selected based on particular ground (cf. Lukka 2014, 563).

The emic accounts that result from studying human behavior from inside the system, however, are just halfway through. The researcher also needs to link his/her findings to a theoretical frame, i.e. to make a theoretical contribution (etic), and this distinction between emic and etic perspectives plays a significant role in all analyses of case study methods (Jönsson & Lukka 2006, 374; see also Lukka & Kasanen 1995; Pike 1954). For instance, Pentland (1999, 712) argues that the most critical challenge in theorizing is “how to move from surface structure to deep structure”; hence to move from description to explanation.

In the subjectivist research paradigms similar ideas are discussed by Lukka and Modell (2010) with the notion of thick explanations. Whilst this interpretive case study pursued to produce thick descriptions and emic understandings of the actors’ meanings beyond observer or subject related biases (cf. McKinnon 1988), these descriptions and understandings were also used to produce explanations (cf. Lukka & Modell 2010, 466; Kakkuri-Knuuttila 2006). Validation was perceived as a concurrent process, which should not be separated from the ongoing empirical search for developing explanations (cf. Lukka & Modell 2010).

The study concentrated on the interaction between top and middle management. Whereas Nonaka and Takeuchi (1995) emphasize the importance of middle managers in continuous innovation due to their position at the intersection of the vertical and horizontal flows of information, focus on this interaction between top and middle management was also found practical in reaching the authentic emic understandings of the actors’ meanings. On these emic basis, the addressed explanations were built on consistent search of true explanatory factors through “what-if” questions and can be therefore perceived to represent the complexity of the studied social phenomena (cf. Lukka & Modell 2010). Hence, by following abductive reasoning (see chapter 1.5) in combination with the principles of counterfactual conditionals and contrastive thinking, the study is grounded on producing emic understandings from the social world and on the ability to develop plausible explanations through the process of abduction (cf. Dubois & Gadde 2014, 1282–1283; Lukka & Modell 2010). Theory and reality were ‘matched’ and these explanations can therefore be labelled “thick” and considered to be “deeply rooted in the life worlds of the people being studied” (cf. Lukka & Modell 2010, 466). Although a single case study has its obvious limitations, by continuously going back and forth between prior literature and empirical findings from the case company, made the emic and etic to discuss to each other in this study, eventually opening a window for contextual generalization (Lukka & Kasanen 1995, 85).

To demonstrate the explanatory value of the findings and their “making sense”, organizational members should consider the results as something that, according

to the theory of enabling formalization, support them in the fulfilment of their tasks and facilitate efficiency and innovation concurrently. The cybernetic control systems and related processes were not seen only positively nor as supportive by the employees in the case organization. More assertive management through right kind of evaluation processes was desired by both department and project managers. It was considered that such style of management would contribute in gaining fellowship between top and middle management and develop the organization by “sharpening” the operations. In this manner, it was seen to positively affect both efficiency and motivational state by increasing enthusiasm and focus levels and eventually, subsequent innovation.

6.3 Suggestions for further studies

Through the features of enabling formalization, this doctoral thesis has explored the relationship between cybernetic controls and innovation, and especially its component of motivation. Whereas focus in prior studies have been more on manufacturing environments, this study has contributed to the discussion around enabling bureaucracy by providing perspectives from a knowledge-intensive engineering organization. However, little is still known about the control practises of knowledge-intensive organizations (cf. Adler & Chen 2011; Davila et al. 2009; Granlund & Taipaleenmäki 2005, 22; Ditillo 2004, 401, 417). More empirical research in innovation dependent service or knowledge-intensive organizations is therefore demanded⁹⁶, which might then result into further development of the framework of enabling bureaucracy.

While the relationship between motivation and management control (not management control systems) is better addressed in the psychology literature, it is less discussed in the management accounting theory. As Davila et al. (2009) note, management accounting literature is emerging on a new control paradigm that conceptualizes management control systems not as a hindrance but rather as something that has potential, even a central facilitating role in innovation and entrepreneurship. Adler and Chen (2011) bring the psychological aspect and motivational underpinnings closer to this new control paradigm with their theoretical notion, thereby opening a possibility for further empirical research. This research has extended their work and identified new aspects to better support employees’ motivational states through internalization of organizational values, as emphasized by them. However, there is clearly room for more research in this area. Future studies could further discuss the set of management practices and control variables needed

⁹⁶ Jääskeläinen and Laihonen (2013, 360) consider knowledge-intensive organizations to form an incoherent group with varying characteristics.

to fulfil the psychological needs of motivation and in this respect, for instance comparison between active and passive innovators could provide interesting findings. Whereas active innovation is “a continual process and does not rely on the pull of external pressures or falling profits”, passive innovation is “more spasmodically driven by shocks that threaten the competitive position of the organization” (Chenhall & Moers 2015, 10). These organizational distinctions could offer fascinating viewpoints on the role and the requirements of management control to support motivation and subsequent innovation in such companies, for instance.

Prior literature has found controversial effects of evaluation pressures on motivation and subsequent innovation. The balance between these is clearly a delicate one and the search of an optimal balance between control and empowerment poses also interesting future research questions. As in the case company, organizations are in general seen to struggle in balancing different uses of management control systems (Mundy 2010, 515). Whereas Johanson et al. (2006, 852) state that “no organization can attain complete balance in the management control process”, a “harmonious configuration” (see Cardinal, Sitkin & Long 2004) is seen to be rather achievable (see Jørgensen & Messner 2009; see also Mundy 2010), thereby calling for more research and comparative data.

However, the balance between competing uses of management control systems is not a static concept (Mundy 2010, 515–516; Jordan & Messner 2012). Environmental situations change and knowledge-intensive organizations are therefore required to adjust their perceptions about this balance (Chang & Birkett 2004, 26). This study does not as such provide direct longitudinal observations of the situation between the control systems and their usage in the case organization. The situation remained rather static during the research process and collection of empirical material⁹⁷ and due to this somewhat static situation, a longitudinal research with a more participative role could provide interesting additional perspectives in regard to the results of this study (cf. Jordan & Messner 2012). For instance, the delicateness of the balance and how it changes over time would offer an intriguing research subject.

In the case organization the top management had recognized the lack of motivation and its importance in innovation (cf. Seidler-de Alwis & Hartmann 2008, 143; Amabile 1988, 133, 139). Innovation, in turn, was discussed by the interviewees to have a central role from a strategical perspective as it is something that the case company promotes to its customers. Concurrently, the value of right kind of pressures and challenges was within the organization acknowledged in bolstering

⁹⁷ During the second phase interviews, some of the interviewees noted that the situation has slightly improved due to the changes in the top management.

such behaviour. These issues, however, could not be directly seen in the top managers' usage of the cybernetic control systems. From this perspective, future research could explore reasons for the style of usage in this kind of situations – what is the background for top managers' actions or lack of actions?⁹⁸ After all, motivation determines what people will actually do (cf. Amabile 1998, 78) and this study has shown the potential of management control systems in endorsing the motivational state and subsequent activities of innovation of the subordinates.

⁹⁸ For instance, are managers aware of the motivational effects of these systems or perhaps just lacking knowledge in how to use the systems to motivate their subordinates?

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APPENDIX 1 INTERVIEWS IN THE CASE ORGANIZATION

	Interviewee	Date	Duration
1	Project manager A (via phone)	15.6.2016	46 min
2	Project manager B (via phone)	16.6.2016	55 min
3	Director A (via phone)	20.6.2016	43 min
4	Department manager A	21.6.2016	75 min
5	Department manager B	22.6.2016	86 min
6	Director B	23.6.2016	40 min
7	Department manager C	23.6.2016	56 min
8	Project manager C	27.6.2016	85 min
9	Director C	28.6.2016	61 min
10	Project manager D	29.6.2016	64 min
11	Department manager D	29.6.2016	44 min
12	Director D	30.6.2016	43 min
13	Department manager E	30.6.2016	50 min
14	Director E	1.7.2016	83 min
15	Department manager F	4.7.2016	41 min
16	Project manager E	5.7.2016	73 min
17	Project manager F	5.7.2016	59 min
18	Project manager A	23.1.2017	25 min
19	Department manager D	25.1.2017	20 min
20	Department manager B	26.1.2017	40 min
21	Project manager D	27.1.2017	39 min
22	Department manager A	30.1.2017	18 min
		Total	19 h 6 min

APPENDIX 2 THEME INTERVIEW GUIDE

Interviewees received a one-page theme interview guide well before the first phase interviews. The interviews were all conducted in Finnish. Here, as translated, are broadly portrayed the most common discussed themes, since the specific guides were more detailed according to the position and tasks of the interviewee in question. The specific interview guides helped sense making during the interviews, provided an input to, and a solid basis for rather open discussions with the interviewees, during which many ‘follow-up’ questions were asked (cf. the method of analytical interview by Kreiner & Mouritsen 2005).

BASIC INFORMATION

- E.g. current position, job description, prior positions in the company

FLEXIBILITY AND INNOVATION

- How is the current knowledge level in the company?
- Fundamentals supporting innovation:
 - How would you describe the organization climate here?
 - How is the role of other supporting structure in innovation here?
 - E.g. IT systems
- In general, do you consider that this company is innovative?
 - Why? In what ways?
- Are innovativeness/innovations important in this company?
 - Can you provide some examples where this comes forth in daily operations?

CONTROL AND EFFICIENCY

- Accounting based management control system as a term – what is your own interpretation?
- In general, how would you describe the management control processes within this company?
 - What kind of matters do they emphasize?
- Tell me about your accounting systems currently in use:
 - Project monitoring

- Budgeting and forecasting
- Non-financial measurement
- Balanced scorecard
- From a technical perspective, how do you feel that the mentioned systems work?
- Which management control system do you deal/use the most in your work?
 - How do you use it?
- How would you describe the evaluation and communication processes in relation to the management control systems within the firm?
 - With which adjectives would you describe the evaluation and communication processes in relation to management control systems here?
 - Can you provide any personal events or narratives?
 - How would you develop the related processes?
- How do you experience the (regular) meetings between top and middle management?
 - Evaluation processes?
 - Ways of interaction?
 - In your opinion, is there something to develop?
- How would you describe the management style in this company?
 - How would you characterize it?
 - How do such characteristics come forth in daily work?
 - Are the characteristics reflected in the use of management control systems?
 - How would you describe the communication between you and your superior?
 - Do you feel that your role in the organization is clear to you?
 - Do management control systems have a role in this communication?
 - How is your work evaluated?
 - Can you provide any examples?
 - How do such ways appear to you?

APPENDIX 3 OBSERVATION IN THE CASE ORGANIZATION

Activity	Date	Duration
1 Observation in a meeting between top and middle management	16.6.2015	2,5 h
2 Observation in a personnel info session held by top manager(s)	16.6.2015	1 h
3 Observation in a meeting between top and middle management	18.8.2015	2,5 h
4 Observation in a meeting between top and middle management	26.4.2016	2,5 h
5 Observation in a meeting between top and middle management	16.5.2016	2 h
6 Observation in a personnel info session held by top manager(s)	20.6.2016	1 h
7 Observation in a meeting between top and middle management	21.6.2016	2 h
8 Observation in a meeting between top and middle management	23.6.2016	2 h
9 Observation in a meeting between top and middle management	1.7.2016	1,5 h
	Total	17,0 h

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