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Ambidextrous perspective in management control system design

Author: Laura Utti

1st Supervisor: Sanna-Katriina Asikainen

2nd Supervisor: Anssi Tarkiainen

ABSTRACT

Author:	Laura Utti
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Globalization and digitalization among other transformational changes are shaping industries in fast pace and innovation has become more important than ever. Organizational ambidexterity, describing simultaneous exploitation and exploration provides managers a fundamental perspective on innovation. Still, as a new research paradigm, tools to enable ambidexterity in practice are hardly existing. Thus, the purpose of this thesis is to study the capability of management control system to enable ambidexterity. More specifically, this study incorporates the role of managerial decisions relating to the control tools in use and control implementation from the employee's perspective to study their role in successful use of controls.

Through the literature and theory, ambidexterity can be linked into management control division presented by Simons (1995). Furthermore, through the literature, elements of successful control implementation were included into an integrated framework representing a categorization of MC tools. This table was then used to explore management control tools' capability to support ambidexterity though a case-study conducted in a R&D unit in Nordea Bank Ab.

Results indicate that traditional managerial side perspective on controlling should be complemented with employee side perspective to evaluate the functionality of control tools in use and to further enable ambidexterity. As a contribution, this study also provides evidence on the usefulness of the presented framework in evaluating management control system tools' capability to enable ambidexterity.

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Suuret liiketoimintaympäristön muutokset, kuten globalisaatio ja digitalisaatio, muokkaavat toimialoja nopeaan tahtiin ja innovaatiot ovat tärkeämpiä kuin ikinä aikaisemmin. Organisationaalinen kaksikätisyys, joka tarkoittaa samanaikaista vahvuuksien kehittämistä (exploitation) sekä uuden luomista (exploration), tarjoaa uudenlaisen näkökulman innovointiin. Kuitenkin, koska kaksikätisyys voidaan vielä nähdä melko uudenlaisena tutkimuksellisena paradigmana, työkaluja sen hyödyntämiseen ei juurikaan vielä ole. Tämän tutkielman tarkoituksena on tutkia johdon kontrollointityökaluja ja niiden roolia kaksikätisyyden mahdollistamisessa. Tutkimus yhdistää tarkemmin johdon valinnat käytettyjen kontrollointityökalujen osalta ja työntekijöiden näkökulman kontrollointityökalujen implementoinnin perustana, jonka tarkoituksena on selvittää niiden roolien merkitystä osana toimivaa kontrollointityökalujen käyttöä.

Kirjallisuuden ja teorian pohjalta kaksikätisyys yhdistettiin Simonsin (1995) esittämään kontrollityökalujen jaotteluun. Yhteiseen taulukkoon lisättiin myös kirjallisuuden perusteella tunnistettuja merkityksellisiä tekijöitä, jotka vaikuttavat onnistuneeseen kontrollityökalujen käyttöönottoon. Lopulta, muodostetun taulukon pohjalta toteutettiin tapaustutkimus tutkimus- ja tuotekehitysyksikössä Nordea Bank Ab:ssa.

Tulosten perusteella voidaan sanoa, että perinteinen johdon puolen tarkastelu kontrollointijärjestelmien käytön osalta ei ole riittävää. Työkalujen käyttöä tulisi täydentää myös työntekijöiden näkökulmilla liittyen kontrollointityökalujen onnistuneeseen implementointiin, siten mahdollistaen myös kaksikätisyyden. Tutkimuksen kontribuutiona voidaan lisäksi mainita tutkimuksen tarkoitusta varten rakennetun taulukon käyttökelpoisuus myös muissa vastaavanlaisissa tutkimuksissa.

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Already from the beginning, this process was very inspirational for me. I spent time for thinking about the topic of my last project in LUT and I must say, it was worth it. The whole project included so much learning and hard work but most of all, it also enabled the joy of learning new.

Because I haven't done this alone, I want to thank my supervisors Sanna-Katriina Asikainen and Anssi Tarkiainen for their valuable guidance during the whole process. I'm also thankful for my adviser Jonna Pesonen from Nordea for her assistance during this project. In addition, I want to thank my boyfriend for his absolutely amazing support for me all the way through. Also, thank you to the rest of my family for all the discussions relating to this project and special acknowledgement to my mom who has done more for this project as she even knows.

I feel grateful for being able to study in LUT and the whole journey has given me much more than I expected. I have had lots of amazing experiences and got close and dear friends. Still, the most amazing is the extent to which I feel I have personally grown during these years. The best example of it is the continuous desire to learn something new.

Gratefully leaving this chapter of life and greeting all the new ones to come.

Espoo 27.5.2019

Laura Utti

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CONCEPT ABBREVIATIONS

OA: Organizational Ambidexterity
BD: Balanced Dimension of ambidexterity
CD: Combined Dimeson of ambidexterity
LOC: Levers of Control
MC: Management Control
MCS: Management Control System

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1. INTRODUCTION

1.1 Research background

"*It is not the strongest of the species that survive,*
nor the most intelligent,
but the one that is most responsive to change".

This quote from Charles Darwin applies also to organizations today (O'Reilly, Harreld & Tushman 2009, 3). Change can be seen as a threat to firm survival if it is not faced accordingly (Suarez & Oliva 2005). In organizational evolution and adaptation research prevails a rich debate relating to the dynamism of change (O'Reilly, et al. 2009). One side argues that individual organizations are mainly inert which leads to change that naturally replaces old forms by new ones periodically (O'Reilly, et al. 2009). Another perspective believes in organizational adaptive capability – and believes to their ability to be responsive and change (O'Reilly et al. 2009). By speaking on behalf of the latter opinion, the aim of this thesis is to study how different tools for management control can enable organizations to be more responsive in rapidly changing and increasingly turbulent business environments.

Responsiveness in business environment includes a paradoxical challenge. Organizations need to have an ability to maintain organizational efficiency and internal stability, while also respond quickly to environmental changes when needed (Ginsberg & Buchholtz 1990). Too much focus on efficiency at the expense of responsiveness is likely to lead organizational inertia and the opposite to organizational chaos – if continuity is not taken into account (Levinthal 1993; Huy 2002). This paradoxical challenge highlights the importance of a capability that enables to cope with different competing demands that organizations continuously confront in the face of environmental changes.

From the innovation management perspective, change requires capability to operate in mature markets through incremental innovations, and in emerging markets through radical innovations (He & Wong 2004). This leads to idea that in order for companies to survive in increasingly complex market environments, they have to have the ability to simultaneously

pursue incremental and radical change (O'Reilly 1996). Organizational ambidexterity (OA), meaning the ability to be two handed and to pursue two contradictory objectives simultaneously, responds to this paradoxical challenge. According to OA, trade-offs relating these kinds of paradoxes cannot be entirely eliminated but can be managed (Tarody 2016). In addition, several studies indicate that ambidexterity especially in uncertain conditions has a link to firm survival (Gschwantner & Hiebl 2017, 1; Tarody 2016; Cao, Gedaljovic & Zhang 2009), performance and innovation (O'Reilly & Tushman 2013).

This research combines ambidexterity perspective with management control (MC) literature and aims to provide better tools for managers to respond more effectively to changes taking place in their business environment through ambidextrous innovation. Furthermore, the purpose of this research is to understand how MC tools could be used to their full potential to enable more effective MC from the perspective of ambidexterity.

1.2 Structure of the study

The outline of the thesis is as follows. The aim of the first chapter is to give a comprehensive picture about the research. Second chapter explains more closely the concepts of exploitation, exploration and OA through reviewed research articles and other literature in the field. The third chapter focuses on Simon's (1995) LOC (Lever of Control) framework and different management control tools. Fourth chapter starts the empirical part and presents the specifications relating to the interviews, the case company and the unit under analysis. In fifth chapter, empirical findings are presented through in-depth analysis of the research material. Results are compared to literature part and to conceptual framework as well as to the categorization of MC tools. Finally, conclusions are presented including a summary of findings, future recommendations, research contributions and limitations.

1.3 Study description

This thesis carries out a case-study taking place in R&D unit called "the Commercial Hub" in Nordea Bank Ab. Financial sector is chosen suitable for the purpose of this study as it is currently facing big changes posing great challenges for financial actors in the field in following years. Changes especially due to digitalization (Tornjanski, Marinkovic, Săvoiu & Čudanov 2015) and regulatory transformations (Heidric & Struggless 2013) currently pose

a major pressure for incumbent firms to respond in order survive. In addition, researcher's own experience in the field influenced to the choice of the industry as well as to the choice of Nordea Bank Ab as a case company. Personal experience and knowledge in the field is seen as an advantage when conducting the empirical research in qualitative manner. Finally, the chosen innovation unit was selected as the best option for the purposes of this study to be able to focus specifically on management control in R&D setting.

1.4 Research questions

Research questions for the study are formed below. Sub-questions are built to respond to the main research question. First sub-question is answered in the literature part of this research (chapter 3) and it focuses on MC tools and their ability to provoke exploitative and explorative behavior needed for ambidexterity. By answering the first sub-question, the aim is to understand how research links MC tools in exploitative and explorative behavior and thus, to ambidexterity. The second sub-question is answered based on chapter 3 to be able to better understand feature of each control category. The third sub-question is answered in the empirical part of this research (chapter 6). Furthermore, it forms the basis of a case study where the aim is to study how successfully recognized MC tools are implemented in use in the R&D unit. Finally, the main research question is answered at the end of chapter 6 by utilizing the knowledge gained from empirical findings.

The main research question:

- How the use of management control system enables or restricts ambidextrous behavior in the R&D unit?

Sub-questions:

(1) How different levers of control can be seen engaging employees in exploitative and explorative action?
(2) What are the critical factors defining the successful functionality of different levers of control?
(3) How are the different levers of control implemented in use?

1.5 Key concept definitions

In this section, the central concepts will be defined relating to the research. Key concepts have been defined as: exploitation, exploration, organizational ambidexterity (OA) and Management Control System (MCS). These key concepts are defined to precisely indicate their meaning in the context of this study and to allow easy interpretation of the study.

1.5.1 Exploitation and exploration

Exploitation describes an act of using existing knowledge and resources and planning actions based on them. Thus, exploitation can be defined as "reuse and refinement of existing knowledge, competencies, and capabilities." (Reynaert 2018, 6). Exploitation can be referred to action called as "local knowledge search" or local search (Cantarello et al. 2012; Li et al., 2008) that is search of current, familiar and mature knowledge (McCarthy & Gordon 2011; Ahuja & Lampert 2001). Local search provides better possibilities for organizations to produce incremental innovations (Nerkar & Roberts, 2004). Exploration, by contrast refers to search of new knowledge and/or resources, and to aim in finding new ways of action (March 1991). Consequently, exploitation can be defined as "the development or search for new knowledge, competences and capabilities." (Reynaert 2018, 6). Exploitation can also be referred as "distant knowledge search" or distant search (Cantarello et al. 2012; Li et al. 2008) that is search of more unfamiliar, remote and distant knowledge (McCarthy & Gordon 2011; Ahuja & Lampert 2001). Distant search more likely provokes radical innovations (Nerkar & Roberts 2004).

1.5.2 Organizational ambidexterity (OA)

Organizational ambidexterity (OA) referring to ambidexterity from the organizational point of view is an extremely multidimensional concept and, in many cases, also often misused. Thus, more specific definition is necessary. Literature defines OA generally as simultaneous pursuit and balance of exploitation and exploration (O'Reilly & Tushman 2013). More specifically, organizational ambidexterity is often described as a capability to be equally dexterous in often conflicting tasks (O'Reilly & Tushman 2004). Similarly, according to Smith and Tushman (2005) it can be also described as simultaneous pursuit of two contradictory objectives. Furthermore, OA can be defined for example as a capability to balance or to

simultaneously pursue exploitation and exploration (Raisch & Birkinshaw 2008). There is a large amount of different definitions and more specific definition is largely dependent on the level (individual, group or organization) of analysis and the theoretical perspective used (Turner, Swat & Maylor 2013). In this study, ambidexterity is understood according to Turner et al. (2013) as individual's ability to use and refine existing knowledge (exploitation) while creating new knowledge (exploration).

1.5.3 Management Control System (MCS)

A management control system, including different MC tools have different roles that Mundy (2010) describe as complementary. First, they are used as tools to control the attainment of organizational goals and second, to enable problem solving and search of new opportunities. According to Merchant and Van der Stede (2007, 5) "Management control includes all the devices or systems managers use to ensure that the behaviors and decisions of their employees are consistent with the organization's objectives and strategies.".

1.6 Literature review

Next, literature review will be conducted relating to the research topic and its development over time. First, ambidexterity research is reviewed and the main perspectives in the field are recognized. Second, the literature and research relating to the use of management control to support ambidexterity in organizations is explored and the need for further research is justified.

1.6.1 The development of organizational ambidexterity research

Ambidexterity is a relatively new field of interest (Popadić and Milohnić 2016; Raisch & Birkinshaw 2008). However, according to Cantarello, et al. (2012) research field has recently acquired larger interest in several areas of research as in organizational learning (Levinthal & March 1993), innovation and technology management (He & Wong 2004), organizational behavior (Gibson & Birkinshaw 2004) and strategic management (Lubatkin, Simsek, Ling, & Veiga 2006; Smith & Tushman 2005).

The concept of ambidexterity was first used by Duncan (1976), after which March (1991) introduced the concept of ambidexterity to wider public (Gschwantner and Hiebl 2016). In

the field of OA research, there is a common understanding that ambidexterity relates to simultaneous pursuit of exploitation and exploration, however, different ways to achieve ambidexterity in organizations has led to conceptual ambiguity. Consequently, the increasing interest of ambidexterity has resulted in divergent approaches about the resources needed and the ways OA can be achieved in practice (O'Reilly & Tushman 2011; Turner et al. 2013). Still, the fact that many studies indicate a clear link between OA to increased innovation, better firm performance and higher firm survival rates of organizations, indicates its importance and has also increased the interest to OA research afterwards (Tushman & O'Reilly 2013).

According Gibson and Birkinshaw (2004), literature has divided into two main perspectives to enable OA. These views can be called as "the structural" and "the contextual" ambidexterity. Authors have traditionally viewed ambidexterity from structural perspective, and it is the broadest field of research (David 2016). Ambidexterity research has got its contextual perspective after Gibson and Birkinshaw (2004) proposed that the tension between exploitation and exploration could be resolved simultaneously through a contextual ambidexterity (O'Reilly & Tushman 2013). Later, for example Brion, Mothe & Sabatier (2010), Khazanchi, Lewis and Boyer (2007), Lubatkin, Simsek, Ling and Veiga. (2006) and Smith and Tushman (2005) have provided evidence on behalf of context and its role in achieving ambidexterity. Still, there exists controversy between different perspectives on how OA can be achieved. However, nowadays many authors share the perspective that structural and contextual perspectives are best viewed as complementary (Birkinshaw & Gibson 2004; O'reilly & Tushman 2013) rather than opposite perspectives.

The literature based on contextual ambidexterity has focused on factors that enable behavioral orientation or capacity to simultaneously pursue exploitation and exploration in individual level (Liselore, Hartog, Keegan & Uhl-bien 2015; O'Reilly & Tushman 2013; Raisch & Birkinshw 2008). According to Gibson and Birkinshaw (2008) different ideas enabling contextual ambidexterity has been presented such as meta-routines and job-enrichment schemes (Adler et al. 1999), behavioral routines for leaders to use (Denison et al. 1995; Lewis 2000) and the creation of shared vision (Bartlett & Ghoshal 1989). In addition, Gibson and Birkinshaw (2008) themselves have presented an actual framing of a context including stretch, discipline, support, and trust to describe the "hard" and "soft" cultural elements that need to be in balance, in order to achieve contextual ambidexterity.

However, research on how to achieve contextual ambidexterity in practice is still rather limited (Havermans, Hartog, Keegan & Uhl-Bien 2015) and research is lacking empirical evidence on how OA is achieved by bridging the managerial and operational level (Cantarello, et al. 2012; O'Reilly and Tushman 2011; Bledow, et al. 2009).

1.6.2 The development of MCS and ambidexterity research

As described above, there is a need for more concrete knowledge on how OA can be achieved focusing especially on managerial solutions. Literature of MCSs' responds to this challenge. An emerging stream of research supports management control as having a central role in achieving ambidexterity (Gschwantner & Hiebl 2016; Bedford 2015). Gschwantner and Hiebl (2016) specify this by introducing some recent studies done in the field (look e.g. Ylinen and Gullkvist 2014; McCarthy & Gordon 2011; Jørgensen and Messner 2009; Kang and Snell 2008) that indicate MC tools enabling companies to achieve ambidexterity. In their review, Gschwantner and Hiebl (2016) have explored 16 most relevant papers currently in the field of MCS and ambidexterity research. As a result of their review authors conclude that all the MC tools recognized can be seen as "valuable in achieving high levels of organizational ambidexterity" (Gschwantner and Hiebl 2016, 26).

Traditionally MCS research in the field of R&D control has been largely focused on performance control systems (Bedford 2015; Bremser & Barsky 2004; Simons 1994; Oatley 1980). Yet, as the market environment has changed, also requirements for MCSs' have shifted from a simple performance focus to a necessity to create entirely new and innovate. Furthermore, as performance focused controls often lead to rewarding exploitative behavior and firm current viability at the expense explorative behavior needed for firm's future survival (Bedford 2015) it is evident that ambidextrous perspective provides a useful perspective for the future MCS research. Therefore, a broader perspective is taken in this study including both, performance and innovation perspective into management control. Furthermore, four forms of management control categorized according to Simons (1995, 2000) LOC framework is used to allocate MC tools into their own categories.

The focus on how managers utilize different MC tools when pursuing ambidexterity has not gained larger recognition until recently, as researchers have started to focus on the design and use of different MCS to achieve OA (Bedford 2015). Furthermore, McCarthy and Gordon

(2011) states that controlling especially in R&D context can be seen to be a challenge as managers have already a long time struggled with creating effective control mechanisms in directing behaviors and outcomes of innovation. Consequently, to contribute to this area of research the aim of this thesis is to study how different MC tools could be used to their full potential to better enable OA.

1.7 Framework for the study

In order to clarify the outline of this study, conceptual framework has been formed. The aim is to present different main concepts and their linkages to each other and to the research topic. Figure 1 describes the studied phenomena through the main concepts of this study.

First, MC categorization is placed in the center of the framework according to the LOC framework from Simons (1995). In the classification, four different levers, called: the belief, boundary, interactive and diagnostic controls, present different MC tool categories. The use of these control categories is enabled through four strategic focus points, referred also as "the strategic variables" and depicted inside the four grey circles in the framework. The use of different levers further provokes two types of control orientation called: the feedback and feed-forward control orientation (McCarthy & Gordon 2011). These controls, according to McCarthy and Gordon (2011), can be seen provoking either exploitative or explorative action.

As already been said, the management solutions regarding the choice of different MC tools is a vital determinant when creating an environment where both exploitation and exploration can emerge. This has been depicted in the framework as "managerial solutions" on the top of the circle and it relates to the selected MC tools in use. However, due to factors relating to human interaction and obscure social reality, the intended managerial use of different MC tools may not realize as such in practice. Thus, only the use of different MC tools from the management perspective is not seen as sufficient enough to be able explain how ambidextrous behavior is enabled. Hence, this research complements the general idea of using MC to achieve ambidexterity only from the managerial point of view, with "control implementation", depicted in the framework on the bottom of the circle. Control implementation is more specifically understood based on two factors. First, whether recognized MC tools are also identified by the employees and whether these tools are

regularly used as part of their work. As well as, if the desired effects and intended outcomes of using each MC tool realizes on behalf of each tool to support their successful usage. Finally, the framework has been framed with a dotted lining to represent organizational ambidexterity as the sum of all of these processes inside the framework.

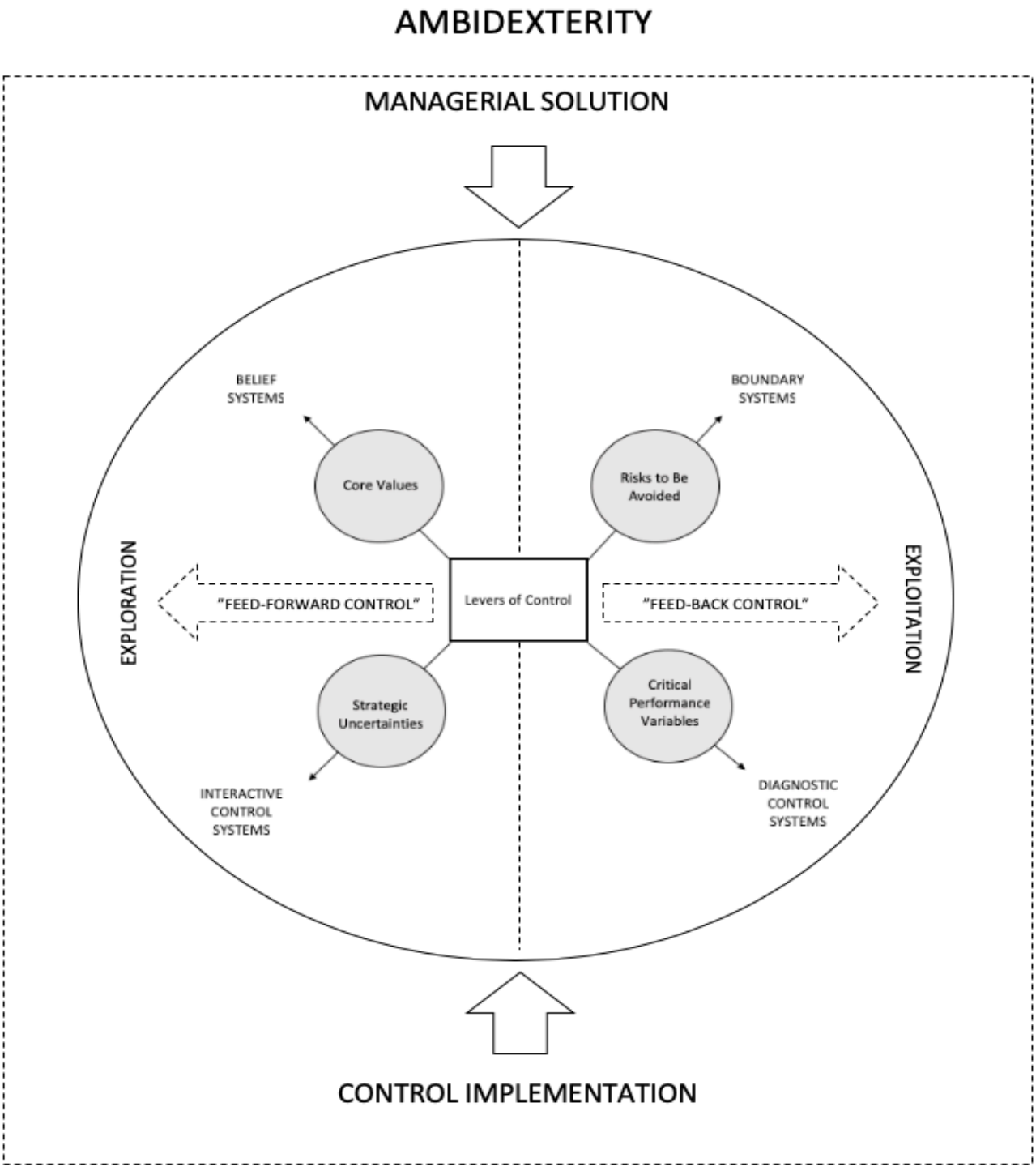

FIGURE 1. Contextual framework

1.8 Research delimitations

Research area has been constrained in order to keep the research manageable by limiting the scope of the research and by amplifying the research boundaries. Regarding the limitations of this study, the use of MC tools is studied in R&D unit context operating in financial sector. MC tool usage is studied in unit level focusing on tools commonly used in the whole unit. Thus, team and individual level controls are restricted from the research focus. Furthermore, MC tools and their usage is analyzed from the employee perspective focusing on the implementation of the MC tools in practice. Hence, the subjects under focus are the employees in the unit instead of managers. Finally, MC tool usage is analyzed focusing on the innovation process as a whole and the use of different MC tools are studied throughout the whole innovation process, from the idea generation to commercialization.

1.9 Research methodology and sources

The research is done by utilizing qualitative research method, exploiting case-based approach. Case study as a research method was chosen as it enables in-depth analysis of the phenomena under research. Furthermore, case study approach is suitable for studying a single event and a limited entity (Hirsjärvi 2004, 125-126) as the R&D unit under focus in this case. Data collection through interviews can be classified as semi-structured interviews, as the interview structure will be consistent and around a restricted theme but still enables freedom to certain extent (Saarinen-Kauppinen & Puusniekka 2017g).

This study uses a large variety of sources. Interview results from management and employees are used as a primary source. In addition, secondary sources as journal articles, books in the field of MCS and ambidexterity, information and material received from the company, company information from websites, and public research reports are used to build understanding and to complement the interviews.

2. EXPLOITATION, EXPLORATION AND AMBIDEXTERITY

In this chapter, the first sub-question is answered. The aim is to clarify the concept of organizational ambidexterity by first taking a closer look at the concepts of exploitation and exploration. Purpose is to more specifically define the concepts of exploitation and exploration and to clarify their linkage to OA. In addition, the basis of organizational ambidexterity concept is explained, and the main forms of ambidexterity are summarized to get a better overview from different perspectives on how OA can be achieved in practice. Finally, more specific focus is given to ambidexterity from innovation perspective and to the idea on how OA enables better innovation.

2.1 Exploitation and exploration in organizations

Benner and Tushman (2003) mention in their article how exploitation and exploration in organizations has been discovered as an important factor for firm survival for a long time. Authors note Abernathy's article in 1978, where he argues on behalf of simultaneous pursuit of exploitation and exploration by stating that firm's ability to compete over time is based on its capabilities to increase efficiency, but also to its ability to engage in innovation simultaneously. March's (1991) argument in his seminal work started the general shift of pursuing these two contradictory objectives simultaneously (Raisch & Birkinshaw 2009). The thought behind the idea of simultaneous pursuit of exploitation and exploration is that firm's excess focus on exploitation may bring efficiency benefits in short-term but makes it difficult for organizations to adapt to environmental changes (Ahuja & Lampert 2001; March 1991).

For several decades later, companies' requirements in meeting several, often opposite demands simultaneously have grown. Consequently, the idea of pursuing exploitation and exploration, through for example adaptation and alignment (Gibson & Birkinshaw 2004), incremental and radical innovation (Jansen et al. 2006) or local and distant search (Katila & Ahuja 2002) simultaneously has been a consistent theme in the literature of organizational adaptation since (Ogrean 2016; Luger, Raisch & Schimmer 2018). Later many known

authors as for example March (1991), O'Reilly and Tushman (1996, 2004, 2008, 2011), Gibson and Birkinshaw (2004), Raisch and Birkinshaw (2008) and Raisch, Birkinshaw, Gilbert & Tushman (2009) have noted the importance of pursuing both exploitative and explorative action simultaneously. There is already a convincing evidence that successful exploitation and exploration enables organizations to survive in the face of change through a capability to reconfigure existing resources while simultaneously developing new capabilities (Gschwantner & Hiebl 2016; O'Reilly & Tushman 2011).

Exploitation is used to describe search of current, familiar and mature knowledge (McCarthy & Gordon 2011; Ahuja & Lampert 2001) and exploration acquiring new knowledge, competencies and capabilities. (Reynaert 2018) In this study exploitation and exploration is understood more specifically through *knowledge search*. Knowledge search is one much used way to understand exploitation and exploration (Li et al. 2008). Furthermore, it is suitable to better understand the utilization of new knowledge in a smaller entity, within one value chain function (Li et al. 2008) as in R&D unit in this case. From the perspective of knowledge search, exploitation is defined as *local search* and exploration as *distant search (*Cantarello et al. 2012; Li, & Schoenmakers 2008*).* The key in understanding exploitation and exploration from the perspective of knowledge search is "weather the new knowledge is familiar or unfamiliar, compared to firm's existing knowledge base." (Li et al. 2008, 108).

Moreover, exploitation as local search relates to pursuit of incremental innovations (McCarthy and Gordon 2011; Brion, et al. 2010; Nerkar & Roberts 2004) and as a behavior is engaged in reducing variation and on gaining efficiency benefits (Li et al. 2008). Exploration or distant search again more often leads to radical innovations (McCarthy and Gordon 2011; Brion, et al. 2010; Nerkar & Roberts 2004) and as an action is engaged in variation seeking, experimentation and risk taking (Li et al. 2008). Hereafter, the concepts of exploitation and exploration are used as synonyms for local and distant search.

2.2 Managing tensions through organizational ambidexterity

The action towards both forms of innovation is extremely important from the perspective of successful R&D but is not easy and includes conflicting demands. Often forces initiated by

exploitation and exploration are competing with each other (Panagopoulos 2016). Furthermore, a limited amount of resources forces organizations to make trade-offs between the competing alignments (Thomas, McKelvey & Kaminska 2012). During exploitative behavior individuals are engaged in utilizing existing knowledge in well-understood ways (Taylor & Greve 2006). In exploration again, varied and dispersed knowledge is utilized in totally new ways to generate novel combinations of knowledge (Taylor & Greve 2006).

Past research has largely treated these conflicting requirements as insurmountable however, recent research has supported the simultaneous pursuit of exploitation and exploration as the best way to cope with the tensions (Raisch & Birkinshaw 2008). Ambidexterity, generally defined as *a capability to balance or to simultaneously pursue exploitation and exploration* (Raisch & Birkinshaw 2008) signifies the ability to manage different tensions and speaks on behalf of continuous pursuit of exploitation and exploration (O'Reilly & Tushman 2008; Gibson and Birkinshaw 2004). Furthermore, already considerable amount of scientific evidence supports the argument that ambidextrous organizations are successful in managing these tensions (Papachroni, Heracleous & Paroutis 2016; Jansen, Van den Bosch & Volberda 2009; He & Wong 2004; Tushman & O'Reilly 1996).

However, ambidexterity research is not in agreement on how these conflicting tensions should be responded. Furthermore, there can be recognized different classifications relating to different perspectives of ambidexterity (Raisch & Birkinshaw 2008). In this thesis, the traditional division by Tushman and O'Reilly (2013) is used, including three perspectives on OA called as: sequential, structural, and contextual ambidexterity. Next, these different perspectives are briefly explained and finally, more emphasis is addressed to the contextual perspective adopted as the perspective for this study.

2.2.1 Sequential ambidexterity

In sequential ambidexterity firms evolve through punctuated changes during which firms adapt to their environments by realigning their processes and structures as a sequential manner (O'Reilly & Tushman 2013). More specifically, during incremental change periods

organizations focus on developing their existing competencies and on exploitative learning (Turner et al. 2013). On the other hand, during discontinuous and revolutionary change periods organizations are required to more radical responses (Turner et al. 2013). This model in achieving ambidexterity is called as “the punctuated equilibrium model of ambidexterity” where organizations temporally shift between exploitative and explorative modes of action (O’Reilly & Tushman 2013; Turner et al. 2013). Exploitative and explorative action in sequential ambidexterity are distinguished by time and thus, they are not existing simultaneously (Turner et al. 2013). Still, sequential ambidexterity, also called as temporal ambidexterity, has been proposed as one way to achieve OA (O’Reilly & Tushman 2013) and is categorized as its own perspective. According to O’Reilly & Tushman (2013) sequential ambidexterity may be useful especially in environments that are relatively stable and for smaller firms lacking the recourses to pursue exploitation and exploration simultaneously.

2.2.2 Structural ambidexterity

Structural perspective, also called as dichotomous view, has been introduced by Tushman and O’Reilly in 1996, who argued that in rapidly changing environment, organizations need to be able to exploit and explore simultaneously. Research on structural view has developed into a broad and deep area of research (O’Reilly & Tushman 2013). Structural approach emphasizes the separation of conflicting demands into independent units, to sub organizations or organizations, that each have their own strategies, structures, cultures, and incentive systems (Panagopoulos 2016; O’Reilly & Tushman 2013). Consequently, from structural perspective standard operations and radical innovations are done simultaneously, but separately in different business units (Turner et al. 2013). Separated units are connected through the same strategic intent, an overarching set of values, and targeted linking mechanisms to utilize shared assets (O’Reilly & Tushman 2004). Structural perspective emphasizes the role of top management that creates integration between different units (Bledow et al. 2009) and is capable of managing the tensions among multiple organizational alignments (O’Reilly & Tushman 2013).

2.2.2 Contextual ambidexterity

Later, Gibson and Birkinshaw (2004) have presented a contextual view, also called as the dialectic view, to manage the contradictions and to reach ambidexterity. Authors define contextual ambidexterity as “the behavioral capacity to simultaneously demonstrate alignment and adaptability across an entire business unit” (Gibson & Birkinshaw 2004, 209). Thus, ambidexterity is achieved simultaneously through individuals and by behavioral and social means (Birkinshaw & Gupta 2008; Ghosal & Bartlett 1994).

Contextual approach argues that a strict separation of conflicting activities is not the most suitable option to manage the contradictions (Bledow et al. 2009) and further, can be sometimes seen even harmful for innovation (Raisch and Birkinshaw 2008; Bledow et al. 2009). Alternatively, tensions should be allowed and managed inside the unit (Bledow et al. 2009). This is also supported by Lewis (2000) stating that actions towards strict separation of conflicting objectives prohibit the possibilities of paradoxes creating “…creative insight and change” referred by other practitioners as paradoxes creating dynamic tensions. This leads to a situation where the possibility to benefit from naturally emerging paradoxical tensions is left unused (Lewis 2000). Consequently, contextual ambidexterity does not separate exploitation and exploration as opposing activities, but interrelated ones, that can be seen as having important complementary effects.

From the contextual perspective, individuals are actors realizing the ambidexterity, but context on the background either enables or prevents individuals to act in an ambidextrous manner. Furthermore, according to contextual ambidexterity perspective, context should enable and encourage individuals to make their own judgements on how to divide their time between exploitative and explorative activities (Papachoni, Heracleous & Paroutis 2018; Raisch & Birkinshaw 2009). In order to achieve a favorable context for ambidexterity, managers have an important role in creating supportive organizational business-unit context for employees to work in (Bledow et al. 2009; Birkinshaw & Gupta 2008). Thus, in addition to structural perspective, management has a pivotal role also in contextual ambidexterity. However, in contextual ambidexterity, managers role is rather to work on the background and build a context for employees that feeds inspiration, give guidance to certain extent and reward people to act in a certain way (Goshal & Bartlett 1997). Here different controlling

tools have a role as building organizational context and thus, enabling and restricting individual action. Furthermore, ambidexterity in this study is based on contextual understanding.

2.4 Operationalizing ambidexterity

As stated already, it is largely accepted that the simultaneous pursuit of exploitation and exploration leads to better firm performance and firm survival (Raisch and Birkinshaw 2009). Earlier in this research different perspectives for achieving ambidexterity in organizations were presented. However, another debate relates to how the balance of exploitation and exploration itself is understood. According to Cao et al. (2009) different perspectives can be separated in two main dimensions called the Balanced Dimension (BD) and the Combined Dimension (CD).

The BD highlights the importance of balance between exploitation and exploration to achieve OA. Furthermore, BD understands exploitation and exploration as opposing paradigms that are located in the opposing ends of a continuum (look Figure 2, picture a.). From this perspective, exploitation and exploration are seen as contradictory and they compete from limited recourses (Cao et al. 2018). Ambidexterity derives according to BD perspective from a capability to avoid imbalance where either exploitation or exploration is over emphasized. As already previously stated, this imbalance may be extremely harmful for organizations and to further even prevent its survival in the long-term (Mundy 2010). Consequently, from the perspective of BD, trade-offs are required to find the appropriate balance between the competing alignments.

From CD perspective, exploitation and exploration are seen as orthogonal to each other (look Figure 2, picture b.). From this perspective one side does not exist at the expense of another. (Gupta et al. 2006) Consequently, CD is about maximizing the combined magnitude of exploitation and exploration (Cao et al. 2018) thus, CD contributes to firm performance through its ability to create greater pool of complementary recourses (Cao et al. 2018). After all, both BD and CD can be considered as contributive in achieving ambidexterity and they should not be seen necessarily as alternative perspectives (Cao et

al. 2018). Consequently, recently authors have started highlighting the mutually supportive nature of both perspectives (Cao et al. 2018). However, as the interest of this study is on individual employees' capability to engage in both exploitation and exploration, recourses can be seen as limited due to the cognitive capability of an individual to comprehend dual requirements simultaneously (Inkpen & Tsang 2005) Accordingly, if these limits are being pushed too much in individual level, it may have drastic negative effects on innovation. This may for example happen if managers continuously require faster phase of innovation by monitoring the amount of ideas generated. This may further lead to a situation where the focus from creating truly useful innovations shifts into producing innovations quantitatively as much as possible. Thus, in this thesis ambidexterity is operationalized through BD, highlighting the need to support both conflicting requirements in a balanced way to enable ambidexterity and better innovation results.

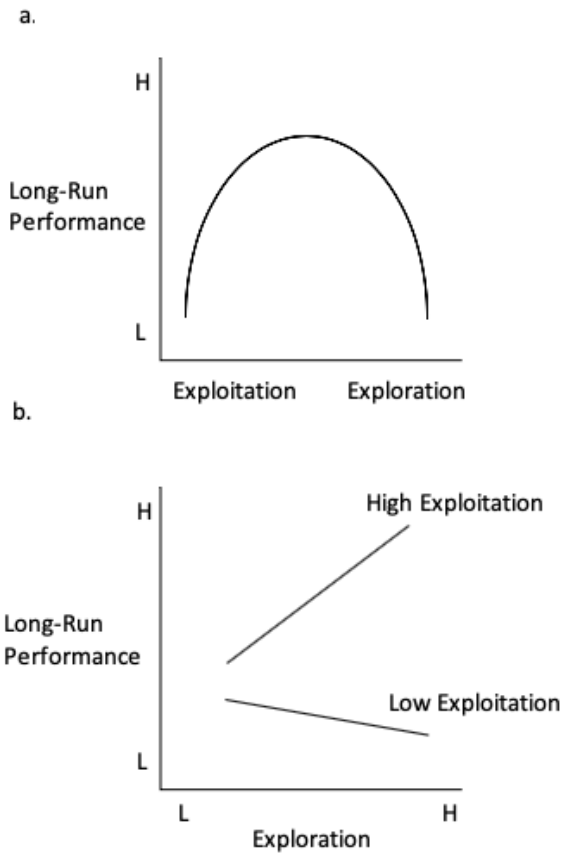

FIGURE 2. The characterization of finding an optimal balance described from CD and BD perspectives according to Havermans (2015).

As BD understands exploitation and exploration as opposing ends of a continuum where the increase in one lead in decrease of another, too much focus on either exploitation or exploration creates imbalance. Excess emphasis on exploration may renew the organizational knowledge base effectively but can trap organizations to an endless cycle of experimentation and search. This will have a negative effect on efficiency which may further reduce the speed at which existing competencies are refined. (Volberda & Levin 2003; March 1991) Levinthal and March (1993) refers to these situations as the “failure trap” where organizational recourses are used without enough financial reward in sight (Levinthal & March 1993). On the other hand, also too much focus on exploitation may lead to a result called “the success trap” (Auh & Menguc 2005). In this case, short term perspective and focus on incremental developments may lead to a situation where distant and more radical innovations needed for future success are overlooked (Auh & Menguc 2005). Research has still not been unable to offer solutions to define the right kind of balance between exploitation and exploration to achieve the most optimal balance (Birkinshaw & Gupta 2013). The concept of balance is rather described as situation specific and very much dependent on different causes like environmental complexity factors at that moment (Havermans et al. 2015).

Thus, from the MCS perspective, in order to achieve an optimal balance in the short-term, the usage of different MC tools should be adapted to reflect the perceived current and expected environmental complexity. More specifically, if the market environment is in a radical change phase and the perceived environmental complexity is higher, the balance should be enabled to move towards exploration. If exploitation would be emphasized in this environment over exploration, the organization would be subject to becoming obsolete leading to possible “failure trap” as the market would be evolving but organization would keep on adjusting its existing competencies. (Havermans et al. 2015) Still, it’s important to note that in order for the balancing to work, path dependencies (Christensen and Overdorf 2000) and core rigidities (Leonard-Barton 1992) should be eliminated. This is due to the fact that they tend to direct the action towards adjusting already existing, meaning exploitation, not on inventing something entirely new. However, in case the market environment is in more stabilized change phase, and the perceived environmental complexity is lower,

exploitation should be emphasized to avoid the risk of being inefficient and unproductive. Still, in order to enable organizational survival in long-term, ambidexterity should be pursued.

Without going deeper into selecting the appropriate balance for MC, it is important to note from the managers point of view, that from the BD perspective the notion of balance is different in the short-term and in the long-term. Above described presents a short-term perspective which enables the act of balancing between exploitation and exploration. However, in the long-term the balance should be as close to quantitative balance as possible (look Figure 2, picture a.). Thus, the short-term use of MC should reflect the needs of the current and expected environmental needs while still enabling both exploitation and exploration at the same time. This can be argued to require sensitivity from managers employing different MC tools. Long-term use of MC should again guide towards quantitative balance in exploitative and explorative action.

3. MANAGEMENT CONTROL (MC) AND TYPOLOGY OF DIFFERENT TOOLS

In this section the first sub-question is answered. Furthermore, this chapter defines the concept of management control (MC) more specifically. In addition, different MC tools are presented according to typology of Simons (1995). As a consequence, the aim is to understand how the use of MC tools effects on individual level behavior and further, how does this enable ambidexterity.

3.1 MC tools and their role in supporting ambidexterity

McCarthy and Gordon (2011) state that in order to reach an adequate balance between exploitation and exploration, the role of MC can be considered even essential. Furthermore, different strategic issues, including balancing both exploitative and explorative behavior can be enabled through the use of different MC tools (Guenther 2013; Mundy 2010; Malmi & Brown 2008). However, when utilizing MC in their work, managers often confront difficulties when trying to find an appropriate balance between the use of different MC tools in practice (Mundy 2010). In addition, according to Mundy (2010), balance is often already distracted due to the natural tendency of managers to use MC coercively rather than enabling way. This should be a vital concern as an imbalance in the use of MC lead to imbalance in exploitative and explorative action which finally affects to innovation performance. For example, too much emphasis on coercive MC methods may be extremely harmful as it often restricts innovative behavior and thus, effects also firm performance in the long-term (Armstrong 2002; Seal 2001). However, too much emphasis on enabling MC in turn, can lead to opposite direction and to inefficiencies in action as potential new innovations do not lead to any real improvements (Mundy 2010). This further negatively effects on long-term performance of the organization (Mundy 2010). Consequently, both enabling and controlling MC should be represented in a balanced manner in order to avoid a situation where either exploitation or exploration is emphasized over another.

MC literature is a broad area of research and there are several categorizations for different types of MC tools. In order to build a valid foundation for the research, the LOC framework Simons (1995) is chosen as best suitable categorization for this thesis. The LOC framework

was chosen as it is one of the most used division in MC literature (Martyn, Sweeney & Curtis 2016). Furthermore, the LOC framework is specifically built concerning the dual use of MC and to promote creativity while constraining employees' behavior (Mundy 2010). In addition, the framework has been built focusing on different *uses* of MC tools rather than on their tangible qualities (Mundy 2010). By focusing on usage of MC tools, one kind of control may be categorized in several ways depending on its use. This enables more reliable categorization of different controls based on their intended use. Finally, according to Mundy (2010), several studies in management literature have already used the LOC framework to explain especially on how innovation and learning can be simultaneously pursued while controlling that goals are achieved (look e.g. Abernethy & Brownell 1999; Bisbe & Otley 2004; Bonner, Ruekert, & Walker 2002; Bruining, Bonnet, & Wright 2004; Marginson, 2002; Tuomela 2005). This makes the LOC framework as the best suitable for this research. Next, categorization for different types of MC tools according to Simons (1995) is presented.

3.2 Simons' levers of control (LOC)

Simons (1995) has presented a much-used division including four types of control systems called: belief, boundary, interactive, and diagnostic systems (see Figure 3 under). The underlying idea of Simons' framework is that opposing forces can be deployed to manage the tensions of conflicting requirements (Bedford 2015). Consequently, Simons (1994) refers to positive and negative controls that provide tools for the management to carry out a controlled tension management. Positive controls are forward looking, inspirational and facilitative (Bedford 2015) and they motivate, guide and reward employees and further, also promote learning and innovation (Tessier & Outlley 2012). Negative controls again try to avoid unfavorable consequences and possible mistakes made (Bedford 2015) and thus, they are used to coerce, control and punish employees (Tessier & Outlley 2012). According to the framework of Simons (1995), belief and interactive systems are categorized as positive controls and boundary and diagnostic systems as negative. Together, these controls work as the "yin and yang", and they are required to exist simultaneously in order to create dynamic tensions, and thereby to ensure an effective control (Tessier & Outlley 2012). According to Simons (1995) it is important to note however, that even though negative controls may easily lead to bad connotations, both negative and positive controls

should be seen as equally important. Hence, to avoid distortive connotations, this study follows different rhetoric and henceforth, term enabling is used to refer to positive kind of controls and term controlling is used to refer negative kind of controls.

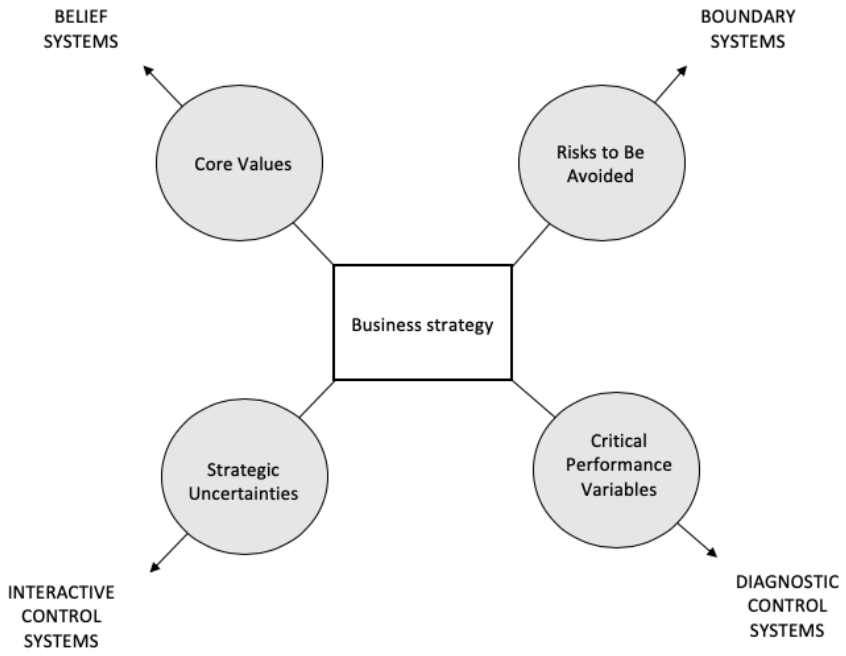

FIGURE 3. The LOC framework and key variables (Simons 1995).

The separation into controlling and enabling controls refers to different behavioral consequences. However, in order to understand better the qualities of different MC tools, also another division is presented. Consequently, McCarthy and Gordon (2011) separate MC tools into feedback and feed-forward controls. Feedback controls according to their name provide after-the-event information and feed-forward controls before-the-event information (McCarthy and Gordon 2011) to support the decision-making of employees. Followingly, boundary and diagnostic controls are categorized as feedback controls and they can be seen as more strict way of controlling. They are used to refine organizational capabilities and practices and thus, they are seen inducing exploitation (McCarthy and Gordon 2011) Belief and interactive systems are categorized as feed-forward controls utilizing less strict control. Feed-forward controls support action that seeks information in

advance of possible future events, trends and their effects and they are often used to adjust behavior and induce exploration (McCarthy and Gordon 2011). Consequently, by emphasizing either of the control categories, managers can move the balance toward exploitation or exploration. Whether the division of controlling and enabling or feedback and feed-forward control is used, the common for both is to separate controls to more strict commands and to more gently guiding actions.

In the following paragraphs the categorization of Simons (1995) is described more specifically including examples of different MC tools used in each category. Further, existing literature will be utilized to understand how MC can be used to induce or provoke exploitative and explorative behavior and thus, also different innovation outcomes.

3.2.1 Belief systems

According to Simons (1997, 170) belief systems can be used to formally "define, communicate and reinforce values, purpose and direction for the organization.". Belief systems encourage subordinates to engage values and objectives set by top management and further to work accordingly. All of the tools that inspire and create commitment to organization's core values can be seen as belief systems (McCarthy and Gordon 2011; Widener 2007; Simons 1995).

Belief systems guide individual behavior in many ways. First, belief systems do not explicitly guide toward certain activities (Mundy 2010) but they provide an important reference point for employees to reflect their judgements whether to focus on exploitation or exploration (Mundy 2010). In other words, belief systems can be used to provide "momentum and guidance for opportunity-seeking behaviors" (Simons 1994, 172). Second, the purpose of belief systems is to encourage employees to be innovative and seek new opportunities (Simons 1995). Accordingly, for example Adler and Chen (2011) have found that belief systems have a positive effect on individual motivation to engage generating novel innovations. Third, also organizational inertia, harmful for especially radical innovations, can be prevented through belief systems as they allow deviations from organizational routines if

they can be in conflict with the values established for the organization (Simons 1994). Finally, shared understanding generated through different belief systems enables better communication, through which disparate knowledge can be combined into new ideas (Hansen 2002). Consequently, as these systems increase variance in many ways which is important also for more radical innovations to emerge (Davila et al. 2009) belief systems can be categorized as feed-forward controls provoking exploration (MCCarthy & Gordon 2011).

In order to achieve the desired outcome, meaning organizational unit to work under the same beliefs based on shared organizational values and direction, as well as having inspired and motivate workforce, belief systems must work accordingly. More specifically values should be clearly communicated in the organization and furthermore, well understood among employees. Practical examples of different tools to achieve this are for example mission statements through which the beliefs can be expressed as well as vision statements that are able to shape the beliefs in the firm (Simons 1997). Also, credos, value statements and statements of purpose can be categorized under belief systems (Bedford 2015).

3.2.2 Boundary control of lever

Boundary systems according to Simons (1995, 39) are used to delineate “the acceptable domain of activity for participants and establish limits, based on pre-defined business risks, to opportunity seeking.”. They restrict the strategic operation area for organizational participants and delineate opportunity seeking behaviors (McCarthy and Gordon 2011; Mundy 2010). More specifically, these systems limit the unlimited opportunities of search into more specifically defined search area where participants are encouraged to exploit (Simons 1995). Hence, boundary controls enable search and innovation but inside specifically defined limits (McCarthy and Gordon 2011).

For the successful implementation of boundary controls, the desired effect of using boundary controls is that operations are clearly restricted into specified limits and further, employees understand the risks and boundaries set for them. These effects will be finally achieved, if employees are also acting within specified limits in practice. (Mundy 2010) When implemented successfully, boundary systems have an important role in preventing possible

over-exploring and further, inefficient action (McCarthy and Gordon 2011) through their ability to prevent search which undermines continuity and reliability of already existing process (Benner & Tushman 2003). Still, they are also able to maintain motivation and empowerment of employees (Adler & Chen 2011). Thus, boundary controls can be categorized as feedback controls and they provoke reliability-based exploitation behavior (McCarthy and Gordon 2011) and further exploitative, more incremental innovations.

Even though boundary controls have an important part supporting exploitative innovation they may also have a harmful effect. This is due to the fact that over time, boundary systems may lead to over-restricting search and thus, to a situation where probability of potential new innovations are restricted too much (Simons 2000). In case boundary controls are over restricting, the scope of search becomes too limited and knowledge required to maximize exploration innovation is prevented.

According to Mundy (2010) MC tools that provide minimum standards and/or sets guidelines for behavior can be categorized as boundary control tools. Furthermore, these controls can be financial, if preventing financial risk or non-financial, if securing strategic boundaries (Tuomela 2005). Boundaries can be communicated through for example codes of conduct (Simons 1995), strategic planning systems and operating directives (Basto, Lourenco, & Samagaio 2018).

3.2.3 Interactive control of lever

According to Simons (1995, 93) interactive systems enable to focus on strategic uncertainties and to build internal pressure to break out of narrow search routines, stimulate opportunity seeking and encourage emergence of new strategic initiatives. Interactive controls provoke discussion, communication and search in line with the organization's vision (McCarthy and Gordon 2011). They can be described as a certain kind of verbal communication mechanisms as these systems are highly focused on promoting frequent and intense communication (Simons 1995). Interactive control systems operate by "scanning" the existing state of the organization after which possible strategic uncertainties (McCarthy and Gordon 2011) as well as emergent opportunities in organization's external environment can be recognized (Simons 1995).

Interactive controls, by nature, are forward looking, inspirational, and facilitative (Bedford 2015) and thus, they execute feed-forward control and are important especially in early phases of radical innovation process. Furthermore, according to Widener (2007) as interactive systems require larger amount of resources and managerial involvement, they are not seen as effective way to control exploitation and thus, are categorized as supporting especially exploration (McCarthy and Gordon 2011).

Interactive controls operate by bringing together people with different knowledge backgrounds. If interactive controls operate properly, they have several positive effects. First, interactive controls promote active questioning and revising as well as discussion and debate relating to changes. Finally, effects of using interactive controls also include that strategies are adjusted, and new strategies emerge. As a consequence, successful outcome of using interactive systems leads to common understanding of strategic uncertainties which prohibits potential threats and possible new opportunities to unexpectedly change the operating environment, that would make the organizational assumptions invalid (Mundy 2010).

Interactive systems enable better communication and search in many ways. First, they can provide a platform where individual tacit knowledge can be transferred into codified form and onward to the use of the whole organization (Bedford 2015). On the other hand, they promote interaction in general as well as they can be used by managers to involve themselves regularly into decision activities of subordinates (Simons 1995). According to Bedford (2015) by enabling managerial involvement interactive systems provide a possibility of recognizing and advancing the most potential initiatives which finally may deliver competitive advantage for the organization. However, it is important to note from the perspective of innovation that managerial involvement does not necessarily mean interference but active participation to the use of interactive systems. Finally, through the collected information and manager involvement, interactive systems inform employees to adjust and correct their actions based on them (Simons 1995).

In general, interactive systems operate through two-way process which enables effective communication between managers and subordinates in different organizational levels (Mundy 2010). Consequently, interactive controls have an attention focusing role, but from

the innovation perspective, they also stimulate learning and search by provoking entirely new initiatives and strategies facilitative and non-invasive ways (McCarthy & Gordon 2011; Bisbe et al. 2006). Interactive controls are effective if subordinates are encouraged frequently to do trial-error adjustments (Chenhall & Morris 1995). There is a debate among researchers whether to define interactive systems as technological solutions as interactive planforms or as a behavior (Bisbe et al. 2006). However, in this thesis both perspectives are integrated as MC tools in this study are categorized based on their intended use. Consequently, interactive MC tools are any kind of processes enabling formal debate (Mundy 2010) whether it is a behavior or technological solution. These tools can be for example intra-organizational networks, information technology and face-to-face meetings engaging groups of people to brainstorm as well as “strategy days” or stand-pit events (Mundy 2010; Frow, Marginson & Ogden 2005).

3.2.4 Diagnostic control of lever

Diagnostic systems are “used to monitor organizational outcomes and correct deviations from pre-set standards of performance.” (Simons 1995, 59). Diagnostic controls can be categorized as feedback controls providing after the event information (McCarthy and Gordon 2011). Thereby, they assure that activities done, respond to organizational objectives and they are often used for evaluations and rewarding (McCarthy and Gordon 2011). The intended effect of using diagnostic systems is to enable progress towards pre-set goals and to enable continuous tracking and adaptation of goals which enables achievement of critical success factors (Simons 1995). Diagnostic controls are associated with mechanistic structures and to high control emphasis (Henri 2006), and thus are seen to be leading to corrective actions and to exploitation (Bedford 2015).

Diagnostic systems have a restricting effect as they narrow the field of research and increase efficiency by measuring tangible, exploitation related problems (McCarthy & Gordon 2011; McGrath 2001). From the innovation perspective, they have an important role in restricting excessive innovation and providing focus that is needed to finally realize possible emerging opportunities (Chenhall & Morris 1995) or innovations. Still, diagnostic systems can also be seen as enabling innovation and search to certain extent. As diagnostic systems focus on outcomes of action and not on the way in which the desired outcome is

achieved, also flexibility and incremental innovations are enabled during the innovation process (Adler & Chen 2011). In addition, according to McCarthy and Gordon (2011) motivating and monitoring employees through diagnostic systems may increase motivation to better achieve intended goals due to easily understandable, tangible measures (McCarthy & Gordon 2011). This is also supported by Mundy (2010) stating that pre-defined goals may also encourage novel solutions due to their tendency to highlight problems and motivate employees to achieve them. However, benefits of motivation due to diagnostic systems can be considered controversial as they are mainly based on extrinsic rewarding and thus, according to Simons (1995) they also may diminish intrinsic motivation which is important especially for innovation and creativity.

Harmful effects of over emphasizing diagnostic control has had an extensive attention in the literature. Furthermore, it is often argued that too much emphasis on diagnostic control and thus, on efficiency related factors, may finally discourage innovation into an extent that finally limits potential returns for the firm (Osborn 1998). According to McGrath (2001) it can be argued that in case goals cannot be clearly defined, as often in exploration innovation, diagnostic systems may turn against themselves and be even harmful. Examples of diagnostic systems are measures like revenue growth rate or market share (Basto, et al. 2018).

As seen, all of the levers of control have their own unique features through which they effect on employees exploitative and explorative behavior. In order to form a unified picture table 1 presents the main qualities of each control type including also factors enabling the successful use of each lever. This framework will be further used as a basis of the empirical part.

TABLE 1. The categorization of MC tools

	Lever of control	Belief systems	Boundary systems	Interactive systems	Diagnostic systems
	Definition	Used for systematically communicate and reinforce values, purpose and direction for the organization	Used to delineate the acceptable domain of activity for participants and establish limits, based on pre-defined business risks, to opportunity seeking	Used to focus attention to strategic uncertainties and to build internal pressure to break out of narrow search routines, stimulate opportunity seeking and encourage emergence of new strategic initiatives	Used to monitor organizational outcomes and correct deviations from pre-set standards of performance
	Control type	Feed-forward control	Feed-back control	Feed-forward control	Feed-back control
MANAGERIAL SOLUTION	**Strategic variable**	Core values	Risks to be avoided	Strategic uncertainties	Critical success factors
MANAGERIAL SOLUTION	**Managerial solution** (tools implemented)	e.g. mission, vision and value statements, credos, statements of purpose	e.g. codes of conducts, strategic planning systems and operating directives	e.g. intra-organizational networks, information technology and face-to-face meetings, brainstorming, stand-pit events	e.g. revenue growth, markets share
CONTROL IMPLEMENTATION	**MC tool usage**	Used/not used	Used/not used	Used/not used	Used/not used
CONTROL IMPLEMENTATION	**Desired effect(s)**	- Organizational values are communicated and understood	- Employees understand the risks and boundaries that must be avoided or minimized - Employee behavior constrained within specified limits	- Active questioning of practices and possibility to propose new innovative ideas - Possibility to modify existing and to propose new forms of action	- Progress towards pre-defined goals - Continuous tracking of goals - Continuous adaptation
CONTROL IMPLEMENTATION	**Intended outcomes**	- Shared vision/values. - Inspired/motivated workforce	- Employees operate within specific limits	- Common understanding of strategic uncertainties	- Achievement of critical success factors
	Ambidextrous outcome	Explorative behavior	Exploitative behavior	Explorative behavior	Exploitative behavior

Adapted from McCarthy and Gordon (2011), Mundy (2010) and Simons (1995).

3.3. The behavioral outcomes of MC tools

As stated, all of the control of levers has an important role in promoting exploitation and/or exploration and thus, together organizational ambidexterity. As described above, literature has already recognized some general outcomes when using different types of levers. Following McCarthy and Gordon's (2011) proposition, a representation has been built to describe the general cause-effect relationships recognized when using different levers of control.

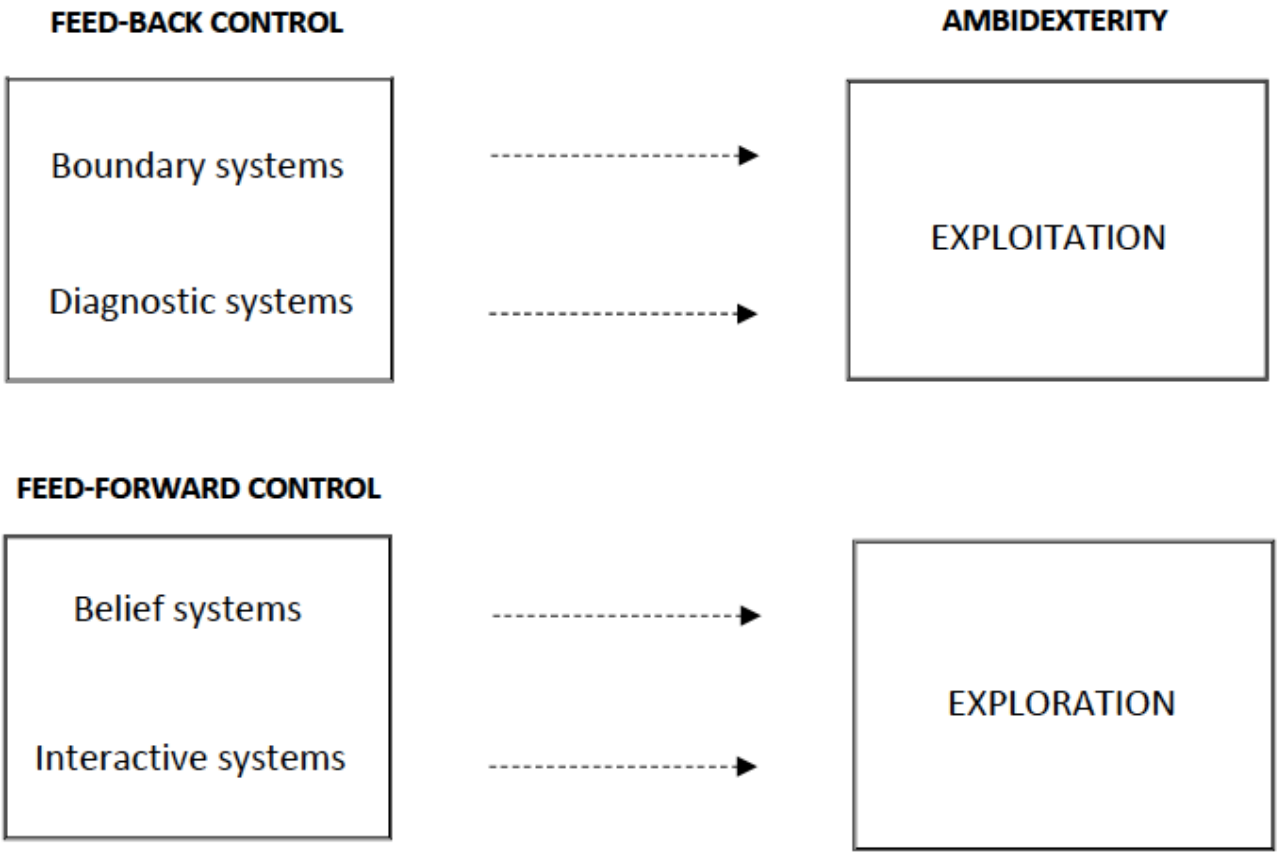

FIGURE 4. MC tool categories and their relationship to exploitative and explorative behavior according to McCarthy and Gordon (2011).

In figure 4 above, the behavioral outcomes according to McCarthy and Gordon (2011) have been presented. Consequently, based on a simplified proposal, the use of boundary and diagnostic systems representing more restricting feedback control lead to exploitative behavior. The use of belief and interactive systems representing more enabling feed-forward control again leads to explorative behavior. Furthermore, in order to achieve ambidexterity, all of the control levers from the LOC framework should be included into a set of tools called an MCS (Simons 1995).

However, a mere balance in using different levers of control does not necessarily lead to realization of ambidexterity. This is because a balanced representation of different levers alone does not mean that they are successfully implemented and used in the unit. Thus, in order to design and use appropriate MCS to enable ambidexterity, managers need to understand how MC tools used have been implemented into the unit, taking into account the specific social context. The importance of control implementation is also supported by the contextual perspective of ambidexterity, in which individuals are the actors realizing ambidexterity. Hence, also experiences are treated as a central factor for the successful implementation of MC tools or a specific MCS and thus, also in realizing ambidexterity. Furthermore, the following empirical part takes into account also the user-side of MC tools used in the innovation unit.

4. CASE DESCRIPTION

This chapter *starts the empirical part of the study and it focuses on describing the research environment more specifically. In order to reflect the theory of achieving ambidexterity through the use of different MC tools into real life context, financial sector has been chosen to represent an environment that is facing radical chances and requires particularly. Next, the changing market environment in financial sector is described after which the case company and unit is generally presented.*

4.1 Financial sector in change

Traditional financial institutions are in front of a big opportunity and a challenge as digitalization is changing the industry at a fast pace. Smaller, more agile companies and start-ups are challenging incumbents with new, some possibly even disruptive, financial technology (FinTech) solutions and new ways to serve the customers. Trends as the Internet of Things (IoT), cloud computing, blockchain, analytics, robotic process automation (RPA) and artificial intelligence among others are trends that are already shaping the industry (EY 2017). Traditional banks are against inevitable change as the market is already fragmenting and industry boundaries are blurring. (Deloitte 2016; Deloitte 2015; Fasnacht 2009)

Incumbent firms are already in a vulnerable position due to their decades-old practices and vast technology infrastructure. In addition, working in a highly regulated market environment poses its own challenges. Furthermore, operating an extensive and complex banking system requires vast amount of recourses and makes it especially difficult for traditional banks to transform operations towards more agile modes of operation. Still, enterprise agility – referred as “the ability to respond rapidly to opportunities and disruption” (Accenture 2018, 2), in fast changing market environment in financial sector is not a negotiable strategy but rather as a necessity (Accenture 2018). This has also been recognized in many surveys, reports and research conducted by large consulting firms around the world (look e.g. Accenture 2017; KPMG 2017; Deloitte 2016; Accenture 2009).

The change has already been largely acknowledged among incumbent firms in financial sector and organizations are now making large organizational changes and adopting new,

more agile operating models while reducing factors causing organizational complexity (Forbes 2017; Deloitte 2016). Whether these organizational changes in incumbent organizations actually enable successful adaptation into future markets with new dynamics, can only be guessed at. Still, without radical transformations, it is certain that the future of traditional financial organizations is at stake. By enabling an ambidextrous approach agility can be further supported.

4.2 Case company and unit

The case company chosen for the study is Nordea Bank Oyj, a large financial organization operating in Nordic region. Company is a full-service universal bank and it operates in four main business areas, including personal and business banking, wholesale banking and asset and wealth management. Company can be classified as an incumbent as it has been operating in the field already a long time. (Nordea 2019)

The study has been conducted more specifically in the case company's R&D also referred as the innovation unit or case unit. Case unit called the Commercial Hub, includes five different smaller teams working around addressed focus areas including the affluent team (savings), home owner team, daily banking and customer care team. (Interviewee B) Commercial Hub is part of a bigger Nordic entity managed by COE Agile practice and Transformation unit, which can be referred as PMO (Project Management Office) that ensures and supports Agile way of working at the group level (Interviewee A).

The case unit comprises together around 20 employees and each of the teams consist around five to six people. Every team includes one "Product Owner" described as the "owner of the product or matter under focus" (Interviewee B). The Product Owner is responsible in maximizing the value of the end product (Scrum 2019) and follows the progress of the work regularly (Interviewee C). The main role of the Product Owner is to manage the team backlog which includes different cases to be handled and prioritized based on their priority and urgency (Interviewee B) while also operating "as the customer for the developer questions" (SAFe for Teams 2019). Teams themselves are self-organizing and do not have a leader in its original meaning. In addition to the Product Owner, each team has a

responsible “Scrum Master” serving the team and helping Product Owner in his/her daily work. The role of a Scrum Master is described as the “agile ambassador” who is working to remove extra barriers and to create seamless workflow for the team (Interview B). To put simplistically, it can be said that Product Owner is responsible on “what” the team does and Scrum Master on “how” it is done (Interview B).

The case unit under focus is following a certified SAFe ® framework (look Scaled Agile 2019a) in its operations to achieve agile way of working, which creates good premises also for OA to realize. This is supported also by Lu and Ramamurthy (2011) by stating that ambidexterity naturally includes the concept of agility. Thus, the context of the study is seen as well suitable for implementation of ambidextrous MC tools in practice.

4.3 Agile way of working

The case unit operates through certified Agile working method (look Scaled Agile 2019) to achieve agile way of working. Agile solution includes a framework and description on how to organize the operations and more specific details about specific working methods. It is built for complex organizations to be able to scale Agile across the organization (Agile 2019b). Agile working method can be adjusted according to organizational and unit-based needs. In order to understand the operations in the case unit, interviews, information found from the official Scaled Agile site (Scaled Agile 2019a) and related study material (SAFe for Teams 2019) received from the unit has been used.

All of the units in the Commercial Hub operate through PI-periods (Program Increment periods) which last three months. Each PI-period is further divided into six smaller sprints each lasting two weeks. (Interviewee C) The first sprint called “the spike” enables exploration through research, design, investigation, exploration and prototyping (SAFe for Teams 2019). The middle sprints are for idea testing and execution and last one is called “the innovation sprint” which is used to dedicate time for innovation, education and planning next PI-period (SAFe for Teams 2019; Interviewee C). In addition, the last sprint can be used to finalize work from the last PI-period (SAFe for Teams 2019; Interviewee C).

Each PI-period can include many “features” all of which have been sized or split into the three-months period (Interviewee A). These features represent a problem or case prioritized by the Product Owner from the team backlog. (Interviewee B) Product Owners engage also developers into feature prioritization in meetings called “the backlog refinements” (Interviewee C). For the prioritized features, Product Owner designs “acceptance criteria” that need to be filled in order to finish each feature (Interviewee B). To be able to ensure the viability of acceptance criteria, Product Owners often confirms them with the employees (Interview B). After these steps have been performed, team starts to build “user stories” that can be described as “containers for user or customer value” (SAFe for Teams 2019). These stories are descriptions about functionality components expressed from the user’s point of view. They are more specifically phrased: “as a customer I want <activity> so that <business value>….” (SAFe for Teams 2019; Interviewee B). Finally, as these user stories have been finished, innovation team creates another acceptance criteria that need to be achieved in order to be able to finalize the user stories.

The entire PI-period divided into six two-week sections also includes specifically defined “ceremonies” that innovation teams carry out regularly (Interviewee C). During one PI-period work flow is controlled through: daily standups and backlog refinement sessions in the end of PI-period (SAFe for Teams 2019; Interviewee B). Working progress and value generated from the work is demonstrated in the end of every sprint in the Sprint Demos (SAFe for Teams 2019; Interviewee B). Also, for retrospection and improvement has its own time every two weeks and these meeting are called Retros (SAFe for Teams 2019). Finally, for the planning and alignment “PI-planning” is used and carried out in the end of PI-period (SAFe for Teams 2019; Interviewee B; Interviewee C).

Consequently, the whole development process in the case unit is a well-defined and clearly structured process based on SAFe ® framework and Agile way of working. Teams in the innovation unit are built as self-organizing, self-managing and cross-functional. Furthermore, innovation work is done through these PI-cycles (SAFe for Teams 2019) and operations are based on continuous improvement (SAFe for Teams 2019) which also enables variations in the way of working between the different teams. Thus, by taking this into consideration, the level of analysis in unit level and the results are analyzed from the perspective of common working methods excluding the possible team specific characteristics.

5. RESEARCH METHODOLOGY

This chapter clarifies the methodological specifications for the study. The aim is to first present the chosen research approach and more specific study design. Second, the data collection methods are defined and more specific clarification regarding the data analysis is introduced. Finally, critical evaluation regarding the research is done including the assessment of factors affecting to the research quality and recognized research limitations.

5.1 Research specifications

This research is done through qualitative approach. Qualitative research method was selected due to the interest and need to better understand the social reality around the use of different MC tools (Saaranen-Kauppinen & Puusniekka 2006a). Qualitative research method is also supported because it enables in-depth understanding of individual views and perspectives (Yin 2011, 7-8). In addition, qualitative research method covers the contextual conditions which may have an essential effect on the results (Yin 2011, 7-8).

Furthermore, a case-study approach has been selected as the research method to study the phenomena under focus. A case-study perspective was selected as the objective is to understand a single event and a restricted entity. In addition to this, a case-study approach is able answer why and how – type of questions (Yin 1994, 5-13) in which the intent is not to reach generalized knowledge but to acquire understanding that is unique in that specific moment and context (Saaranen-Kauppinen & Puusniekka 2006b).

Characteristic for case-study interviews are used to gather the material needed for the research. As the focus of the interviews is a specifically defined area of interest, a semi-structured research is used (Yin 2014, 110; Saaranen-Kauppinen & Puusniekka 2006c). In addition, semi-structured interview utilizes pre-defined questions still providing possibilities also for spontaneous conversation (Eskola & Suoranta 1998) which can be considered as a benefit when exploring individual experiences.

Unlike qualitative research often, this research cannot purely use inductive reasoning as observations relating to the research are based on existing knowledge. According to Laine,

Bamberg and Jokinen (2007, 38) particularly in case-study approach it is characterized that theories and concepts can also be used in advance to guide the collection of material and in carrying out the research analysis, which diverges from the inductive understanding. On the other hand, neither deductive approach can be used to describe the reasoning used in this research as the analysis of this study is not based on an existing theory or model. Rather, relevant knowledge from existing research has been collected to guide the empirical research. Thus, certain combinative approach of inductive and deductive perspectives is considered as best to describe the type of reasoning used in this study (Saaranen-Kauppinen & Puusniekka 2006f). According to Grönfors (2008, 17-18), when results do not unfold based on mere observations, abductive reasoning can be used to describe the type of reasoning.

5.2 Gathering the empirical data

Data collection is done to seven different people where first three present “the managerial side” of the research and last four “the employee side” of the study. All of the interviewees are kept as unidentified and separated with their own alphabet. Partly pre-defined questions have been formed for the research in order to acquire information from a particular issue. Still certain freedom for the research is enabled.

Interviewees for the research have been chosen by utilizing a snowball sampling technique (Saaranen-Kauppinen & Puusniekka 2006d). Both, the management and employee interviewees are found through the recommendations of interviewees themselves or through their colleagues. The presented number of interviewees was considered satisfactory due to well selected informants and observed saturation of the material (Saaranen-Kauppinen & Puusniekka 2006e). The quality of interview data can be seen increased due to the sampling method, especially because the most experienced employees in the innovation unit were found for this case-study.

First interviewee (Interviewee A.) works in the Nordic level, managing the Agile practices and organizational transformations in all innovation units in group level. Second interviewees (Interviewee B, and interviewee C) are operating as management-level

decision-makers with the innovation teams. These interviewees have been titled according to SAFe® Agile framework (Scaled Agile 2019) as Product Owners. All first three management interviews were done by following the first interview pattern (Appendix 1) which is addressed to the management. Next four interviews relate to second employee interview pattern (Appendix 2) which is addressed to "the employees", meaning the developers. Last four interviewees operate as developers in the innovation unit from three different teams. Interview details are more specifically presented under (look Table 2).

TABLE 2. Data gathered for the research: profiles of the interviewees

INTERVIEWEES	TITLE	INTERVIEW PATTERN	INTERVIEW TIME
Interviewee A.	Business Change Lead	Pattern 1.	46 min
Interviewee B.	Product Owner	Pattern 1.	1h 7 min
Interviewee C.	Product Owner	Pattern 1.	45 min
Interviewee D.	Innovation team member	Pattern 2.	1h 6 min
Interviewee E.	Innovation team member	Pattern 2.	45 min
Interviewee F.	Innovation team member	Pattern 2.	47 min
Interviewee G.	Innovation team member	Pattern 2.	40 min

5.6 Research quality

The terminology in qualitative research divides opinions and debate exists whether the traditional way of evaluating quantitative research through validity and reliability can be used to evaluate the quality of qualitative research as well (Kortjens & Moser 2018; Morse, Barrett, Mayan, Olson & Spriers 2002). In this research credibility, transferability, dependability and confirmability are used to assess the quality of the study.

Credibility refers to an idea whether the presentation of the data is associated with the participants' understanding and thus, if the findings are eligible (Kortjens & Moser 2018;

Anney 2014). On this behalf, credibility was improved by conducting relatively long interviews with pre-defined structure, and by enabling also free conversation during the interviews. In addition, multiple methods for data collection was used. In addition to management and employee interviews, also company sites, official Scaled Agile (2019) pages as well as material received from the company were used to reflect the interview findings.

Transferability evaluates whether the findings from the research can be used also in other settings (Kortjens & Moser 2018; Anney 2014). Regarding the categorization of MC tools, the table can be used to evaluate control tools' capability to support OA in other organizational entities dependent from the industry. However, regarding the interviews, the outcomes are not generalizable and thus, the results are not transferrable to other contexts or settings.

Finally, confirmability relates to the validation of the qualitative data and that the findings can be confirmed from the perspective of other researchers (Kortjens & Moser 2018; Anney 2014). Dependability relates to how clear, traceable and logical the research is and further how traceable the study is in the long term (Kortjens & Moser 2018; Anney 2014). Both of these can be evaluated through an audit trail. Confirmability and dependability have been improved by being transparent with the research process and by describing each step carefully during the research from the development phase to reporting. In addition, the interview patterns have been presented in the appendixes and more specific interviewee specifications have been represented.

6. ANALYSIS AND EMPIRICAL FINDINGS

This chapter presents the empirical findings of this research and answers to both second and third sub-questions. Interview findings are presented per each MC category for both management interviews and employee interviews. First, the results of management level interviews are reviewed and identified MC tools are presented. Second, employee interviews are explored to analyze the success of control implementation.

6.1 MC tools in the innovation unit

First phase in the analysis is about recognizing the used MC tools. To be able to systematically find different MC tools related to different control lever categories, categorization of MC tools (look Table 1) was used to structure the interview pattern for management (look Appendix 1). In accordance with the categorization of MC tools the strategic variables are first recognized after which the managerial solution, meaning the MC tools in use, are presented per each lever of control.

6.1.1 Belief systems

The strategic relevance of belief systems is to guide action through commonly known and accepted principles and beliefs. As presented previously, belief systems can be seen as tools that inspire and create commitment to organization's core values. Belief systems are especially important for inducing exploration behavior.

Based on management interviews, organizational values were recognized as the used MC tool under the category of belief systems. Organizational values, defined as: collaboration, ownership, passion and courage (Nordea 2019a) were recognized by all management interviewees and they are described to be in active use as part of the work in the innovation unit. For example, interviewee C more specifically stated: "…these values guide all activities and it is thought that employees should confront them so often and in so many ways that they start to understand their meaning.".

Furthermore, specific tools that were used to promote values were also identified from the management interviews. Tools that emerged from the management interviews were value mats, value-based structuring of customer feedback, value-based structuring of employee satisfaction query, Skype-meetings, value stickers and interactive screens. Value mats were recognized by all management interviewees and were described to be used part of the work in the innovation unit. For example, interviewee B stated: "…a value mat has been given for every superior and I still use it a lot. […] Even today it [value mat] is a fantastic way for example to create team spirit and else."

Other value-based tools used as part of the work in the innovation unit were customer feedbacks as well as employee satisfaction queries that both are structured based on four value principles and are done regularly (Interviewee C). Also, Skype-meetings had a recognized role in promoting values in the R&D unit. It was mentioned that Skype-meetings are used actively especially by higher management in their communication while simultaneously promoting the essential values of the organization (Interviewee B). Finally, also some physical details engaging employees to the organizational values were brought out. These were stickers in mirrors and walls reminding from the organizational values with different slogans (Interviewee A; Interviewee B). One example of these was noticed also by the researcher as in the kitchen area of the innovation unit a sticker was reminding employees to keep the kitchen clean with a slogan stating: "Take ownership. Keep the kitchen clean.". Similar kind of idea is also used in interactive screens around the company office sometimes reminding employees of the company values (Interviewee A).

6.1.2 Boundary controls

The ultimate idea of boundary systems is to delineate the innovation activity into certain, more specifically defined operation areas to avoid irrelevance and inefficiency, thereby avoiding also the realization of certain pre-defined business risks related to opportunity seeking. The role of boundary systems is thus more restricting but equally important. Boundary systems are often seen to be promoting exploitation innovation.

The strategic variable related to boundary systems is "risks to be avoided". Furthermore, several kinds of risks were brought out; person related risks, risks of losing Agile way of

working, risk of interruptions, innovation risk, reputation risks, legislation and compliance risks. Person related risks was seen to be related to stalling of daily work for example due to illness or change of an employer (Interviewee B). Also, risk relating to integration problems was noticed. This was more specifically identified as a situation in which personnel do not engage in Agile way of working which poses a risk of destroying the Agile mode of operation (Interviewee B). Also risk of interruptions was considered as important due to especially time management problems. From the management perspective, the intention is to optimize the time management in the innovation unit (Interviewee C). Thus, possible "side orders" are seen as risk and they should be controlled (Interviewee B; Interviewee C). Also, innovation risk was recognized by interviewees. More specifically, if the innovation unit or teams in it focus too much on being "inside-out instead of outside-in", innovations generated may not meet with the real customer needs (Interviewee C). Finally, possible risks relating to reputation, legislative violations and risks relating to compliance were also mentioned. However, as these last three risks, according to the management interviewees, were outsourced from the employees' range of responsibilities and they have their own specialized units (Interviewee A), they are not taken into account in this study.

Next, the interviews focused on tools to manage these risks in order to be able to prevent their realization in practice. Person related risks relating to pauses in work, in case of employee absence, is responded with a practice where the range of responsibilities are shared and are not only on one person's shoulders (Interviewee A; Interviewee B; Interviewee C). This kind of practice concerns especially tasks called the features and user stories, related to Agile practices (Interviewee B). Risk relating to integration and engagement to Agile way of working again was described to be managed through a Capability lead, Product Owner and Scram Master that are expected to notice and observe these risks (Interviewee B). In addition, employees themselves have been trained to Agile way of working through certified trainings. Thus, also employees themselves have an important role in noticing and reacting to these integration and engagement problems (Interviewee B).

Third risk that was recognized was the risk of interruptions and interrelations. Management solution or tool to avoid this to realize belongs to Agile way of working as a general practice and is handled in two ways. First, team-specific responsibility areas have been applied (Interviewee A; Interviewee B; Interviewee C). All four teams, including the Affluent, Home

Owner, Daily Banking and Customer Care team, have their own responsibility areas, which also enables to restrict the operating area of each individual team. In addition, another tool is titled job descriptions among team members. As already mentioned, every team has usually their own entitled Scram Master and Product Owner in addition to developers themselves. According to management interviews both Scram Master and Product Owner have their role as “blockers” of unnecessary distractions and interruptions (Interviewee B; Interviewee C). However, their role from that respect differs from each other. Scram Master is part of the daily work in innovation teams and his/her responsibility is to remove impediments and protect the team from outside influence that are related to the daily work matters (Interviewee B). Then again, Product Owner mainly manages the team backlog and selects larger issues waiting to be processed and thus, is not present in the daily work of the innovation team continuously (Interviewee B). Due to this, Product Owner operates also as a blocker but mainly for issues that require possible action in refining the backlog (Interviewee B).

Finally, also innovation risk was identified due to a possible tendency to produce inside-out innovations instead of outside-in thus, ignoring the actual customer needs in the development work. This was considered as crucial as the capability of the innovation unit to be profitable is largely dependent on its ability to produce innovations that respond to customer needs (Interviewee A; Interviewee B; Interviewee C). This risk is well acknowledged in the unit by every management interviewee and tools recognized to encourage employees to outside-in innovation was recognized. First, the prioritization of different features is partly based on customer feedback. Thus, when the same issue is highlighted from the customer feedbacks received, it is prioritized higher for more urgent handling (Interviewee A). Furthermore, as the feature prioritization is partly weighted based on customer value estimation, the innovation process often leads to innovation that leads to fulfillment of customer needs (Interviewee B). Still, as the prioritization includes also a variety of other weighted factors, customer needs are not always the premise of the problem which may also lead to obsolesce in innovations (Interviewee B; Interviewee C). Another tool used are user stories built under one feature. As previously described, user stories are made by employees and are phrased from customer’s perspective. This enables to look each development project from the customers point of view and to direct the focus of innovation more towards the users themselves. In addition, continuous discussion on being outside-in is stimulated and encouraged continuously (Interviewee C). Finally, to promote outside-in

thinking, also other more specific methods and tools such as service design, customer surveys and customer interviews are used as a tool to be more user-oriented and to guide the development process (Interviewee B). The use of these tools however, is not unified and their use is not consistent between the different teams nor inside the teams and thus, are left out from this review.

6.1.3 Interactive control of lever

Interactive systems focus on strategic uncertainties of external environment and as tools they can be seen promoting interaction between the employees and management. Interactive systems encourage employees to seek new opportunities. Thus, the role of interactive systems is more liberating and promotes exploration.

For the interactive systems “the strategic variable” is defined as the strategic uncertainties. Based on the management interviews, several strategic uncertainties could be recognized. These uncertainties included digitalization, small agile actors, economy and business cycles, customer needs and behavior, the fulfillment of corporate social responsibility as well as the regulation in the banking sector. However, as already stated, risks relating to regulation are externalized from the developers operating area and thus, are not considered further in this case.

Furthermore, the identified interactive tools to manage the strategic risks relating to the external environment are meetings and ceremonies relating especially to innovation sprints and backlog refinement sessions (Interviewee B; Interviewee C). Agile way of working itself includes several ceremonies including interaction. Most relevant ceremonies for this purpose were seen to be the last sprint called the “innovation sprint” where time is reserved for different innovation events as workshops and “hackathons” (Interviewee B; Interviewee C) Also the backlog refinement sessions were identified as another tool. In backlog refinements developers can bring their own ideas to the backlog and the required interaction between the employees and managers realizes through Product Owner that is hosting these meetings (Interviewee B).

6.1.4 Diagnostic control of lever

Diagnostic systems have an important role in restricting excessive innovation and thus, providing efficiency and ensuring productivity. As restricting controls, they promote exploitation. Diagnostic systems focus on achieving the critical success factors defined for the operating entity. Thus, in order to be able to identify the most important diagnostic tools used in the innovation unit, critical success factors are first recognized based on management interviews after which the tools are identified.

For the diagnostic systems “the strategic variable” is defined as the critical success factors of the unit. Based on the management interviews, they are recognized as; increasing sales and customer satisfaction as well as improvement of digital transformation all of which are continuously monitored and quarterly and yearly reviewed for possible adjustments in operative action (Interviewee A). Furthermore, the effectiveness of implemented innovations was mentioned as a measure to follow these (Interviewee B). Identified success factors are measured in each team differently, and diagnostic tools vary by team and their expertise area. In Affluent team, net flow of savings is measured, in Home Owner team mortgage markets shares and weekly sales of new mortgages are monitored, in Daily Banking team availability (time to get service) is measured, and in Customer Care team customer satisfaction should be rising (Interviewee C). However, according to interviewee C, action tied into these quantitative goals, especially when talking about sales, is not fully implemented into practice and teams are with varying intensity tracking the sales numbers under their own expertise area. In addition to team specific goals, diagnostic tools are also set based on each feature by specifically taking into consideration the case related specifications (Interviewee B; Interviewee C). However, as the feature specific diagnostic tools are not directly related to the critical success factors defined for the unit, feature level diagnostics are excluded from the study.

6.2 Control implementation in the innovation unit

To be able to confirm the implementation of recognized MC tools and finally, their ability to enable ambidexterity, employee interviews (interviewees from D to G) were conducted (look Table 2, page 39). Next, each control lever category is similarly reviewed from the employee

interviews. Interview questions (look Appendix 2) were structured based on the categorization of MC tools (look Table 1) which includes the evaluation of control implementation.

6.2.1 Belief systems

Based on management interviews, MC tools relating to belief systems in the innovation unit were recognized as the organizational values. Furthermore, specific tools categorized under the organizational values are value mats, value-based structuring of customer feedback, value-based structuring of employee satisfaction query, Skype-meetings, value stickers and interactive screens. Based on all employee interviews, only value mats were mentioned by all interviewees. In addition, Skype meetings was mentioned by two (Interviewee E and Interviewee F), value stickers were recognized by one (Interviewee G) as well as the interactive screens (Interviewee E). Consequently, value-based structuring of customer feedback and employee satisfaction query were not recognized in any of the employee interviews.

For the belief systems, the desired effect is defined as: organizational values are communicated and understood. Additionally, the intended outcome is defined as: “shared vision/values and inspired/motivated workforce”. To understand whether the desired effect and intended outcome is realizing, employee interviews are analyzed.

Based on all employee interviews, organizational values are recognized well among all and each could name all of the values specifically and further to also indicate their meaning from the personal perspective. However, based on all employee interviewees the communication of the values could be clearly recognized but only focusing to the moment when the values were first launched two years ago. An exception from this are management Skype-meetings that were described as still regularly reminding employees from the organizational values (Interviewee E; Interviewee F). The value mats identified by all of the employee interviewees were described to be out of use or hardly in use nowadays. Value stickers were still seen sometimes (Interviewee G). Interactive screens were described as not in use (Interviewee E). Still, even though the recognized value tools are hardly existing in the home office and in the innovation unit, all employees could describe situations when values were brought up

in the daily work. Interviewee E and interviewee D said that these values nonetheless live among employees in Nordea and now and then, values are raised to the discussion. This was supported by all the other interviewees in different ways. Interviewee F for example noted that values can be used among the developers in rhetorically to challenge action that is not in accordance with the values. As Interviewee D said: “we kind of have a humoristic working environment so that we sometimes also use values ironically, using a locution: ‘yeah, that was truly an ownership there!”. In addition, interviewee F described that values are also used to point out grievances in practices for example if the action is not in line with the Agile principles.

Consequently, based on the fact that every employee interviewee could name each value, it is inferred that values are communicated well. Also, as every employee could describe the meaning of each value to themselves, it is interpreted that values are also understood. Thus, organizational values are communicated and understood according to the desired effect. Furthermore, the desired effect can be seen realizing relatively well. In addition, based on the fact that each employee interviewee could describe daily work situations where values have been brought up, it is interpreted that values are also shared among employees. Furthermore, as employees felt the organizational values fitted to their own set of values, also workforce can be seen as inspired and motivated through them. Thus, values are shared, and employees are motivated and inspired trough values according to the intended outcome. Consequently, the intended outcome is enabled.

6.2.2 Boundary systems

Based on management interviews, several risks to be avoided were recognized by management related to opportunity seeking. These were person related risks, risks of losing Agile way of working, risk of interruptions and innovation related risks. Based on these risks, different MC tools were categorized. Person related risk to control the stalling of daily work is controlled through a principle that: responsibilities are shared relating to features and user stories. Another person related risk is integration and engagement to Agile way of working and is managed through responsibilities of a Capability Lead, Product Owner and Scram Master as well as developers own responsibilities to react. Risk of interruptions and dependencies are controlled with a team-specific area of responsibility and titled job

descriptions among team members. Finally, the innovation risk meaning a tendency to produce inside-out innovations instead of outside-in innovations is controlled through two different tools. First one is a feature prioritization method that highlights customer feedback as a factor raising the criticality of the issues. Second, the user stories are built by the team developers to guide the action.

For the boundary systems, the desired effect is defined as follows: “Employee behavior is constrained within specified limits and employees understand the risks and boundaries that must be avoided or minimized.” In addition, the intended outcome is defined: “Employees operate within specific limits.” To understand whether the desired effect and intended outcome is realizing, employee interviews are analyzed.

When employee interviewees were asked whether they recognize the principle: “No one is responsible for a specific feature or user story alone”, all interviewees identified it in their work. Further, it was asked, how meaningful do they see this principle in their work. Still, all consistently described the principle as very important. Reasons varied from the fact that in case of absence, work can still be continued (Interviewee E), also because work is more efficient, and the quality of the work is better (Interviewee D; Interviewee F). Also, work was considered more enjoyable because of better personal sense of security due the fact that the work continues (Interviewee D; Interviewee F). Finally, it was asked whether this principle is actually used in the unit. Responses in this regard varied depending on which team was discussed. As interviewee D said: “I have experience from both, and it [the realization of the principle] largely depends on the dynamics of the team, meaning; whether individual performers or group spirit is present.” Furthermore, interviewee E stated: “…previously [in the previous team where the developer worked] it could be so that features and user stories were left only under one developer’s responsibility, despite the fact of what Agile principles says.”. Also, interviewee F thought that this principle could sometimes work better. On the other hand, interviewee E stated that: “I would say that it [the principle] works well especially in this team now.” Also, interviewee F said that this principle works well on his/her perspective. As a consequence of this analysis, it can be said that principle and its importance is recognized among all interviewees in the daily work. Thus, the desired effects are considered to be realizing. However, as the realization of the principle varied due to the notice that this principle does not actualize in all teams, the intended outcome does not realize.

Another person-related risk of integration and engagement to Agile way of working is managed according to management interviewees through responsibilities of a Capability Lead, Product Owner and Scram Master as well as developers' own responsibilities to react. When analyzing the employee responses to the statement: "Agile way of working is actively promoted in your team and unit and possible deviation is actively managed", the answers were different from each other. Despite the fact that every employee interviewee identified this principle as an important for their work, its realization was not always described as successful. Interviewee D said: "Even though we regularly have our Agile ceremonies, it does not mean that we automatically have an Agile operating model. I feel in our team it is largely dependent on team expertise and discipline how Agile we are. It is easy to slip back to the old process model and project-based working". Furthermore, interviewee E said: "I would say that yes, it [the principle] has been made visible, but possible deviations are not always 100 percent intervened.". On the other hand, interviewee F experienced that this principle realizes well in his/her unit: "Yes, we do follow this [principle] very strongly as we have this everyday 'daily' [daily stand-up] and as our work is also very transparent, you can't really slip through.". It was also mentioned by some interviewees that Agile way of working should not necessarily be always compulsively maintained as it may for example slow down the work. This was observed to possibly create collusion between employees as some experienced the Agile way of working as especially important. In addition, it was felt by one interviewee that the development of employees as Agile professionals is not encouraged and supported enough and personal development on that behalf is mainly left on employee's shoulders. This can be seen as negatively effecting on employee's capability to maintain the Agile way of working. Furthermore, it was recognized that there was unclarity or unwillingness to take a stand on whose responsibility it is to actually ensure that this principle realizes. Consequently, Agile way of working according to management interviewees is managed through responsibilities of a Capability Lead, Product Owner and Scram Master as well as developers own responsibilities to react. However, based on employee interviews, these responsibilities are not equally well in use in every team. Thus, the desired effect or intended outcome cannot be seen realizing.

Third risk that was recognized is the risk of interruptions which are controlled with a team-specific area of responsibility and titled job descriptions among team members according to management interviews. Both tools are fixed part of work in every team and well interpreted

as well recognized. Furthermore, when analyzing the realization of this boundary control, employees were asked whether they think the following principle is actualizing in their unit and team: “Possible ‘side orders’ interrupting the daily work are effectively prevented.”. All of the respondents identified this principle as important in their work. Furthermore, Interviewee D responded that: “It [the realization of this principle] depends on the size of the possible order.” Furthermore, one interviewee said that Product Owner has a crucial role in here and according the experience, some Product Owners are like walls and enable work without any disturbances. On the other hand, it was noted that some Product Owners are “leaky as sieve”. Interviewee E described that: “I clearly see that we have more peace to work nowadays …we do what we have planned beforehand at least around 85 percent of the time.” Interviewee F also said that: “I think we have managed to work without extra side orders on the table… Scram Master and Product Owner kind of protect the team from them.”. Consequently, the importance of this principle is well understood however, employee behavior is not constrained entirely on this behalf. Thus, the desired effect or intended outcome does not fully realize.

Fourth risk relating to a tendency to produce inside-out innovations instead of outside-in innovations is controlled through two different tools. First, whether a feature prioritization and second, whether user stories, built by the team developers, guide the action. Furthermore, these tools are a solid part of the Agile way of working in the unit and they are well recognized among employees. In addition, their use is monitored and based on guided work through information technology and thus, the effectiveness of these tools is not questioned. Consequently, both the desired effect and intended outcome is realizing on their behalf.

6.2.3 Interactive systems

Strategic uncertainties relating to interactive systems based on management interviews are digitalization, small agile actors, economy and business cycles as well as customer needs and behavior. The recognized interactive tools to manage these meetings/ceremonies are defined as the backlog refinement sessions and the innovation sprints. Both tools are generally recognized in active use and described to be a fixed part of the work.

Furthermore, the desired effects of using interactive systems are: “Active questioning of practices and possibility to propose new innovative ideas” as well as: “Possibility to modify existing forms of action and to propose new ways is made easy for everyone”. In addition, the intended outcome is defined as “Common understanding of strategic uncertainties.” To understand whether the desired effect and intended outcome are realizing on behalf of these tools, employee interviews are analyzed.

First employees were asked whether they think the innovation sprint provokes active questioning of practices and enables possibility to propose new innovative ideas. According to employee interviews the innovation sprint was recognized as such. All employees recognized the innovation sprint as enabling the questioning of practices and providing a possibility to propose new innovative ideas. However, it was mentioned by the interviewees that the innovation sprint is also used to finish unfinished tasks and thus, the actual time allocated for the innovation and brainstorming is not that clearly defined. Furthermore, its duration and the way it is actualized may vary a lot. According to interviewee G: “… [innovation sprint’s] content may still vary depending on teams because it’s used to also finish old and unfinished tasks.” However, according to interviewee E: “… usually we always have tried to take time also for development and innovation then [during the innovation sprints].”. Next, it was asked whether employees felt that in the innovation sprint, a possibility to modify existing forms of action and to propose possible new ways is made easy for everyone. This was accepted by all and as interviewee G said: “… [the innovation sprint] aims doing things differently allowing ideas to flow.” Furthermore, there was no recognized hindrances on this behalf. Consequently, the desired effects can be seen realizing however, only to the extent where time is reserved for innovation and brainstorming. Furthermore, as there is no fixed time for innovation, the potential of the innovation sprint to operate as interactive system to the full extent is limited. Based on this, the innovation sprint enables also the intended outcome.

Next it was asked on regarding the backlog refinement session whether employees feel that it provokes active questioning of practices and further gives a possibility to propose new innovative ideas in their unit. All interviewees responded that they think this is mostly true. However, it was mentioned by one interviewee that the extent to which the backlog sessions support questioning and possible new ideas is much dependent on how responsive the Product Owner is. According to interviewee: “There have been examples where the Product

Owner might have been too controlling and stepped out of the Agile way of working. This, I see, can affect to the innovative environment negatively." In addition, interviewee D noted that even though backlog refinements are places where "…things can be questioned" interviewee felt that this is largely a person-related principle whether it realizes or not as some are more courageous to raise issues than others. Further, it was asked whether employees felt that the backlog session gives a possibility to modify existing forms of action and to propose new ways and whether it is made easy for everyone. Employee interviewees felt that everything can be questioned. Still, it was mentioned that proposing new ways needs to be well reasoned and it came out that in some cases high tolerance is kept before changes are presented. Interviewee D for example stated that: "…then we had a justification that we don't see the benefits for this [presented change], but it still took quite a long time until we managed to bring it out.". Consequently, the desired effects can be seen realizing relatively well but sometimes high tolerance is kept before bringing new ideas into table. Consequently, on behalf of the backlog refinement sessions, the intended outcome is mainly enabled.

6.2.4 Diagnostic systems

Based on management interviews, three critical success factors for the unit were recognized; increasing sales and customer satisfaction and improvement of digital transformation. As the innovation unit operates through different teams in varying specialization areas each success factor is tailored per team. Furthermore, diagnostic tools used were specified as follows: in Affluent team net flow of savings is measured, in Home Owner team market shares of mortgage markets and weekly sales of new mortgages are monitored, in Daily Banking team availability (time to get service) is measured, and in Customer Care team customer satisfaction should be rising. Thus, all diagnostic tools are quantitative and focused on either sales or customer satisfaction. Furthermore, the role of diagnostic tools monitoring the digital transformation in the unit remained unclear and no diagnostics were brought up in that regard in management interviews.

Relating to diagnostic controls the desired effects are progress towards pre-defined goals, continuous tracking of goals and continuous adaptation. In addition, intended outcome is

defined as the achievement of critical success factors. To understand whether the desired effect and intended outcome is realizing, employee interviews are analyzed.

Consequently, when employees were asked whether their work is based on pre-defined goals and measured regularly, all employees' interviewees agreed. When employees were asked to describe these goals, they described that their goals are set per each sprint, for every two weeks. These goals were specified as different acceptance criteria, user stories, and goals set by the Product Owners and developers specifically for each PI-period and separate sprint (Interviewee D; Interviewee F; Interviewee G). Furthermore, when employees were asked to describe the goals generally set to guide their work, all identified them mainly as qualitative. According to interviewee E: "I think that maybe they [goals] could not even be quantitative in our work. […] They [goals] are maybe more qualitative." Finally, when mentioning about the defined diagnostics per team, employees described their role as quite small in their work. For example, according to Interviewee F: these kinds of business objectives are of course sometimes explicitly defined for some features." however, according to interviewee, they cannot be followed in short-term and thus, their role in work remains low. Furthermore, it can be noted that the critical success factors defined for the unit are not set to engage employees to work towards them consciously and progress and deviations relating to them are not actively followed. However, it should be noted that as MC tools should promote effective innovation in this case, the effects of engaging employees to follow these success factors in short-term should at least be questioned. This is due the fact that too much focus on efficiency and numeral goals may harm the innovation work in the end, as noted in the theory part. Consequently, the use of quantitative goals should be considered by each team separately. For example, measuring customer satisfaction in short-term may not give relevant picture about the real impacts of how effective the innovation work actually is as results often realize in longer-term. However, regular monitoring of net flow of savings or weekly sales of mortgages, that are also defined as success factors, could possibly enable better focused innovation activity. To conclude, it can be stated that based on employee interviews, critical success factors are not engaging employees actively to progress, track and adapt their action, leading to a situation where the desired effect of diagnostic tools is not realizing. Thereby, the actualization of intended outcome is not enabled either. Consequently, the critical success factors followed by management and tools implemented for their measurement are rather kept as indicators for higher management. This can be considered as an expected result as in management

interviews it was noted by interviewee C, that the above-mentioned quantitative tools used to monitor the critical success factors of the innovation unit are not connected well into the daily or weekly work of the innovation unit. Furthermore, a conflict between the managerial intentions and work in the innovation team can be noticed as the work in the unit is largely guided through qualitative goals even though the management follows operations through quantitative tools.

6.4 MCS and ambidexterity in the innovation unit

After analyzing the used MC tools and their implementation in the unit, the final implications can be made to assess whether different MC tools work according to the defined requirements, and further whether different control levers are supporting exploitative and explorative behavior. For this assessment, the categorization of MC tools (look Figure 1) will be used to reflect interview results into the theory reviewed.

Regarding the belief system, organizational values were recognized as used management control system. However, on that regard hardly any tools identified by the management to promote the existence of these values were identified by the employees to be in active use. Thus, values are mainly used in random occasions through employee's own initiatives. Furthermore, the organizational values are in use in the innovation unit, but their existence is not strongly supported which limits the potential of the belief system to provoke exploration. Still, both the desired effects and the intended outcome are realizing on behalf of belief system. Regarding the boundary system, several control tools were implemented in use according to management interviewees. In addition, all of these tools were recognized by the employee's interviewees and identified in active use. However, recognized boundary tools were partly used inadequately which prevents the realization of the desired effects and intended outcomes. Thus, boundary controls are not in effective use and their capability to provoke exploitation is also limited. Regarding the interactive system, both recognized tools are identified by the employees. However, as the use of another interactive tool was inadequate, the capability of interactive system to provoke exploration is partly limited. Still, the desired effects were fulfilled, and the intended outcome can be seen realizing on behalf of both tools. Consequently, interactive systems can be considered working and accordingly provoking exploration with a limitation. Finally, diagnostic tools presented by the management to define and control the critical success factors of the unit were recognized

but not actively used as guiding tools according to employee interviews. Thus, their desired effect or intended outcome is not realizing and thus, also their capability to provoke exploitation is limited. Thus, the diagnostic tools are not effectively in use.

As a conclusion, the MCS used in the innovation unit is not used to its full potential as impediments were noticed in every lever of control. Furthermore, two reasons for the limited use of levers are preventing the effective use of levers. First, relating to the MC tool usage, some of the implemented tools were observed to be in use to varying degrees. This naturally affects the levers capability to provoke exploitative or explorative behavior. On the other hand, some MC tools did not fulfill the desired effects or intended outcomes defined for different levers of control to be able to work properly.

Consequently, from the ambidexterity point of view, even though MC tools in use cover every lever of control category, observed impediments in their use prevent their capability to courage employees to exploitative and explorative behavior. Hence, their capability to provoke ambidexterity is limited. The results have been assembled also into a framework (look Appendix 3).

7. CONCLUSIONS AND RECOMMENDATIONS

This chapter presents conclusions and recommendations from the practical and from the theoretical point of view. Recommendations have been constructed based on the empirical analysis reflecting the results to the theoretical part of this research. All conclusions and recommendations have been presented per each control category to clarify their presentation.

7.1 Theoretical conclusions and implications

The review of the MCS literature provides answer to the first and second sub-question. Furthermore, according to the literature reviewed, different levers of control can be divided promoting ambidexterity either through their exploitation or exploration favoring elements. Based on this, a conclusion could be made to answer to the first sub-question. Regarding the belief and interactive levers, action is directed more towards explorative action due to their role as enabling feed-forward controls. Boundary and diagnostic levers in turn, can be seen promoting exploitative behavior as more restricting feedback controls.

More specific review of different control categories provided knowledge for the second sub-question. For each control lever category, also factors defining the functionality requirements of every control category was recognized from the literature. These factors were presented in two different groups. First, the desired effects and second, the intended outcomes for each control lever. In addition to these, also their actual usage among employees was included to the analysis in order to get better understanding of employee engagement in using the recognized tools. Based on the empirical results, both, the mentioned (1) functionality factors together with (2) actual MC tool usage offers important knowledge relating to successful control implementation in the unit. Based on this, the second sub-question is answered. Furthermore, both of the mentioned factors can be seen as critical perspectives defining the successful operation of each lever of control.

Consequently, by answering to the first two sub-questions, a categorization of MC tools (look Table 1) was developed for the purpose of analyzing MC tools' capability to provoke

exploitative and explorative behavior and thus, also MCS's ability to enable ambidexterity. Results indicate important observations regarding the successful MC tool usage. Furthermore, this research provides evidence also on behalf of the usefulness of the used categorization in evaluating MC tools capability to enable OA in other settings in the future.

From the theoretical perspective, following implications can be noted. Based on the empirical research outcomes, it can be argued that in management control tool implementation, (1) MC tools are actually used and (2) the functionality of their use, evaluated through the desired effects and intended outcomes, have a critical role in evaluating the proper functionality of MC tools also enabling ambidexterity. Consequently, a response for the main research question can be made as follows. A MCS's capability to enable ambidexterity is dependent on management ability to ensure control tools endorse both the intended effects and the desired outcomes and further, that each implemented tool also engage employees in their use.

These notions are based on two factors. First, as the result of the empirical analysis revealed relating to the control implementation that even though all identified MC tools were recognized also among employees, obvious inconsistencies and deficiencies were observed in their actual use. Furthermore, tools may not be in consistent use or their use might have been dismissed in practice which indicates the importance of including MC usage in evaluating the success of control implantation. In addition, when analyzing the implementation of MC tools based on the specified intended effects and desired outcomes for each control lever, clear impediments were observed also on their behalf. These impediments observed are presented in the next section describing the practical conclusions. Consequently, it can be argued that also the intended effects and desired outcomes play an important role in enabling proper functionality for each MC tool and hence, to the whole control level category.

To sum up, it can be stated that in order to reliably evaluate MC tools' capability to provoke exploitation and exploration and further, MCS' ability to enable ambidexterity, two perspectives are needed. First, from managerial side, management solutions (i.e. MC tools used) should be categorized clearly. Second, from the subordinate side referred in this thesis as employees, control implementation should be analyzed including evaluation of MC tool usage to assess employee's engagement in using the tools as well as the analysis of

the desired effects and intended outcomes to asses the functionality of the controls. By taking both of these perspectives into account, it is argued that MCSs' capability to provoke OA can be more reliably evaluated.

7.2 Practical conclusions and implications

Next, the practical development suggestions and possible managerial implications relating to the results are presented. The aim is to reflect the research findings and to evaluate the success of control implementation relating to the recognized MC tools in use and further, to reflect this to their capability to enable exploitation and exploration and ambidexterity in the R&D unit. Results are introduced focusing especially on three aspects: the tools implemented by management, the actual MC usage and the functionality of these tools based on the desired effects and intended outcomes of their usage.

7.2.1 Belief systems

The foundation of belief systems is grounded mainly on established organizational values even though also other belief systems was recognized. Thus, the relevance of the other belief system – the Agile principles, in guiding the daily work should be considered and possibly specified. However, the organizational values can be considered well implemented into the unit and employees are engaged to them. Still, it was noted that organizational values are not actively promoted using fixed practices or tools and thus, their maintenance is largely dependent on individuals' actions in the unit. Thus, the active use of organizational values as part of the work could be strengthened through better utilization of MC tools.

7.2.2 Boundary systems

For the boundary systems, several risks and implemented boundaries were brought up by the management interviewees. First tool is sharing the responsibilities related to specific features or user stories in order to avoid the stalling of daily work. All employees recognized

its importance as part of the daily work. However, in its execution opinions varied. Two interviews revealed that this principle and the fact how successfully it is carried out depends on the team. The realization was also mentioned to be depended on individual characteristics whether team members are individual performers or group players. On the other hand, two of the interviewees felt that this principle actualizes well. Based on these results, in order to confirm the position of this tool, the focus should be put to encourage team work verbally and to implement possible supporting incentives to encourage team work instead of individualistic performance.

The second tool to ensure the integration and engagement to Agile way of working is responded with promoting the Agile working method and its principles through a Capability Lead, Product Owner and Scram Master as well as through developers' own responsibilities to react to possible deviations. This principle was acknowledged by every employee interviewee and everyone identified it as an important or quite important and meaningful principle. However, its realization was not felt as successful by every employee interviewee. Furthermore, it was described that the actualization is dependent on team expertise related to Agility as well as to the discipline to stay in Agile in each team. In addition, it was mentioned that in case Agile way of working is diverged, it is not always intervened. Consequently, to strengthen the position of this principle, it is recommended that Agile way of working according to SAFe ® is regularly promoted through trainings to strengthen the team expertise. These trainings should be also taken into account on behalf of more experienced employees, not only for new employees. This is supported also by one employee interviewee mentioning a lack of professional development relating to Agile. To promote the team discipline to stay in Agile way of working, the principles of Agile should also be promoted more visibly and all employee's responsibility to react should be emphasized more clearly. This is also supported by the fact that some of the employee interviewees felt that staying in Agile way of working is especially important while others felt it should be the premise but should not always be maintained compulsively. Thus, employees understanding differs regarding to what extent Agile way of working should be maintained in reality and therefore, more clarity is needed. Finally, it is recommended to clarify responsibilities regarding to this principle as it was recognized that there is unclarity or unwillingness among employees to take a stand on whose responsibility it is to actually ensure that this principle realizes.

Third risk to control interruptions and dependencies are managed through team specific area of responsibility and titled job descriptions. Both tools are well implemented in use however, the prevention of interruptions referred as the “side orders” was considered largely as situation specific. Problems raised relating to this principle were related to personal capabilities to say no as well as the Product Owner’s “permeability” regarding these side orders. As this principle was not entirely consistently used, it is recommended according to employee interviews that more specific boundaries should be set in order to legitimate employees from the side orders they feel they should take. In addition to this, also higher emphasis should be put to Product Owners’ and Scram Masters’ responsibilities on this regard and susceptibility to raise deviations in keeping the interruptions or “side orders” in control, should be highlighted.

The final risk of producing inside-out innovations instead of outside-in innovations is controlled according to management interviews through feature prioritization and user stories made by the developers. On behalf of the tools, there is no confusion about their use and this risk can be considered as consistently acknowledged also among the employee interviews. However, tools recognized from the management interviews include some defects and cannot be considered as fully functioning. Hence, unit is exposed to the risk of producing unnecessary innovations. Thus, it is recommended that more accurate MC tools are implemented to consistently promote the customer perspective in innovation work and further, to take account the possible pitfalls that may lead to useless innovations that are not accepted by the customers.

7.2.3 Interactive systems

Various strategic uncertainties as digitalization, small agile actors, economy and business cycles and customer needs and behavior were recognized by the management, requiring active response from the innovation unit. Interactive tools to manage these are meetings/ceremonies noted as backlog refinement sessions and innovation sprints. Both tools are recognized and used by all employees.

Furthermore, regarding the first desired effect of interactive system, it was noted that active questioning of practices and possibility to propose new innovative ideas is enabled in the

unit and teams. However, some impediments were also observed. First, relating to innovation sprint, it was noted that time spent for innovation and brainstorming was not clear and often this time is spent on tasks accumulated during the PI-period. Even though both management and employee interviewees mentioned that during the innovation sprint the intent is to always do also something different, as to study or to innovate and arrange brainstorming sessions, it is noted that this is not a solid part of the innovation sprint. Thus, to engage the innovation unit better into this interactive tool, it is recommended that the time for brainstorming and innovation should be considered as a fixed period in the innovation sprints. Second, on behalf of the backlog refinement sessions, it was mentioned that in case Product Owners have taken too much control, the innovative environment may have suffered. Thus, it is recommended to evaluate the realization of the roles in each team in regular intervals. In addition, relating to backlog sessions as a MC tool, it was mentioned that personal traits may prohibit some people to speak up in these meetings. Thus, it would be preferable to implement actions, practices or incentives to encourage all to open discussion and to lower the threshold to speak up.

The second desired effect defined as the possibility to modify existing and to propose new ways of action got a positive response mainly from all employee interviewees. Still, one impediment was observed. It was noted that sometimes high tolerance is kept before bringing new ideas into table. In this regard, there may be a need for tools, practices or incentives to encourage employees to propose new ideas with low threshold.

7.2.4 Diagnostic systems

Relating to diagnostic systems the desired effect is progress towards pre-defined goals, continuous tracking of goals and continuous adaptation. Tools according to management to support the desired effect are different quantitative measures for each team. Furthermore, when conducting the employee interviews, it was noted that only few of the employees recognized one of these diagnostic systems. Thus, employees are not engaged to the critical success factors named by the management which also prevents the realization of the desired effect and intended outcome. Consequently, it is recommended that these success factors would be more clearly indicated to the innovation unit and to each team in it and further, that the exact diagnostic tools would be clearly brought out in order to better focus

the action towards them. However, it is also important to avoid too much focus on efficiency and numeral goals that distract the assessment of the real impact of innovations. Unnecessary short-sightedness relating to diagnostic tools may prevent successful innovations. By taking this account, it could be considered whether employees' awareness regarding the used diagnostic tools could be still raised, creating an environment where action would not be entirely linked to the success of achieving these the intended numbers.

7.3 Research contribution

The literature in the field of ambidexterity has gained a large interest among researchers in recent years. Consequently, OA research has become a vague and extremely complex area of research with various different perspectives and conceptions about ambidexterity as a concept. Despite the fact that ambidexterity research has gained interest, practical tools to enable ambidexterity are rather limited, almost non-existent as revealed in the literature review. Thus, this thesis contributes into this gap of knowledge and provides a premise for MCS design to support individual ambidexterity through developed categorization of MC tools (look Table 1).

This thesis has a contribution from academic and practical point of view. From the academic perspective, this research provides a framework analyzing MCS's capability to provoke ambidexterity. Unlike the research in the field in general, this study includes both, managerial and subordinate perspective to the evaluation of MCS's capability to enable ambidexterity. Furthermore, despite the fact that the empirical evaluation has been carried out in a financial organization in R&D setting the framework is also applicable to other kinds of entities operating for other purposes.

From the practical point of view several development proposals could be made based on the categorization of MC tools. Furthermore, more specific knowledge could be gained relating to the used MC tools as well as their implementation into the unit. This provides important knowledge for managers to be able to use MC tools to their full potential to support ambidexterity.

7.4 Research limitations and future research recommendations

As always in research, also this study includes limitations. First, literature can be seen as a limitation for this study as the research field of ambidexterity is still quite scarce not to mention the research combining ambidexterity to MCS design. In addition, when forming the framework for the study, it should be noted that recent research on MCS and ambidexterity has also identified cross-effect between the different MC tools. This indicates, that by dividing each control lever category leading into either exploitation or exploration, is rather simplified and should be seen as a limitation. Still, as the literature relating to the possible cross-effects is still extremely scattered and does not provide convincing and consistent information, these cross-effects were left out when building the categorization of MC tools. Nonetheless, on behalf of the used theory, a simplified allocation of each control lever category can be considered as justified and valuable due to their role as fundamental conception when building new knowledge relating to the possible cross-effects in the future.

By reflecting these limitations, more through and coherent research relating to cross-effects between the different levers and MC tools is needed. Furthermore, as the knowledge increases relating to these cross-effects it is recommended to expand the analysis on their behalf. In addition, as studied, the successful implementation was argued to be largely dependent of MC usage and the desired effects and intended outcomes. Also, their role from the quantitative perspective could be studied more specifically. Moreover, as OA is not only a simultaneous act of exploitation and exploration but also a balance between them, further research is needed to understand the balancing of ambidexterity in practice. Finally, as MC tools per se are not creating exploitative and explorative behavior, their effect to some transitional factor is needed. As the perspective in achieving ambidexterity in this thesis is contextual, it is thus argued by adapting to Gibson's & Birkinshaw's (2004) arguments that the context in which individuals operate has a substantive part in enabling ambidexterity. Thus, for the future development of the presented framework, it is proposed to combine an analysis regarding contextual factors that may enable or prevent the effects of MC tools and further ambidexterity.

Furthermore, also more general limitations for the research can be recognized. Due to qualitative approach, the results of this research cannot be generalized to larger population

as this study is based on a single event case study. Hence, the results of this research should be seen as context dependent and further, should rather be seen as individual opinions than as generalizable fact. In addition, as the qualitative research method requires researcher's involvement, researcher's objectivity and subjectivity has an acknowledged effect to the research. However, on behalf of the researcher, these issues have been taken into account and possible affecting attitudes and beliefs have been actively reflected during the whole research process. Finally, as characteristic for qualitative studies, for the empirical part, the number of interviewees is restricted which limits the coverage of the research. However, discretion was used when selecting the most fitting interviewees. Still, after conducting the research, all of the interviews could be noted as relatively extensive and saturation was recognized hence, also justifying smaller number of candidates. Also, regarding the interview results, it should be noted that there can be distortion due to possible desire to give more positive view about matters included into the interviews. After all, as relatively many impediments for successful functioning of different MC tool were observed relatively relaxed atmosphere during the interviews have been achieved.

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REFERENCES:

Abernathy, W. (1978). The productivity dilemma. Baltimore: Johns Hopkins University Press.

Abernethy, M. & Brownell, P. (1999). The role of budgets in organizations facing strategic change: an exploratory study. Accounting, Organizations and Society, 24(3), 189-204.

Accenture (2017). Banking Is a Living Business. [Online document]. [Cited 26.2.2019]. Available https://www.accenture.com/t20170630T055651Z__w__/cn-en/_acnmedia/PDF-56/Accenture-Banking-Living-Business-PDF.pdf.

Accenture (2018). Enterprise Agility in Financial Services. The new strategic imperative. [Online document]. [Cited 26.2.2019]. Available https://www.accenture.com/t00010101T000000Z__w__/gb-en/_acnmedia/Accenture/PDF-43/Accenture-Enterprise-Agility-Web.pdf.

Adler, P. & Chen, C. (2011). Combining creativity and control: under- standing individual motivation in large-scale collaborative creativity. Account. Org. Soc. 36 (1), 63–85.

Adler, P., Heckscher C., & Grandy, J. (2013). From Clans to Collaboration: Collaborative Community as the Basis of Organizational Ambidexterity. USC working paper.

Ahuja, G. and Lampert, C. (2001) Entrepreneurship in the large corporation: a longitudinal study of how established firms create breakthrough inventions. Strategic Management Journal, 22, 521–543.

Ancona, D., Goodman, P., Lawrence, B. & Tushman, M. (2001). Time: A new research lens. Academy of Management Review, (26): p. 645-663.

Anney. V (2014) Ensuring the Quality of the Findings of Qualitative Research: Looking at Trustworthiness Criteria. [online document]. [Cited 15.1.2019]. Available https://pdfs.semanticscholar.org/1419/f7b54e6b7f1215717a5056e0709f8946745b.pdf

Andriopoulos, C. & Lewis, M. (2009) Managing Innovation Paradoxes: Ambidexterity

Lessons from Leading Product Design Companies.

Antonacopoulou, E. (2007) Practice. In Clegg, S. and Bailey, J. (eds.), International Encyclopaedia of Organization Studies. Sage, London, pp. 1291– 8.

Armstrong, P. (2002). Management, image and management accounting. Critical Perspectives on Accounting, 13, 281–295.

Atieno, O. (2009). An analysis of the strengths and limitation of qualitative and quantitative research paradigms. Problems of Education in the 21st Century, 13(1), 13-38.

Auh, S. & Menguc, B. (2005). Balancing exploration and exploitation: The moderating role of competitive intensity. Journal of business research, 58(12), 1652-1661.

Bartlett, C. and Ghoshal. S (1989) Managing Across Borders: The Transnational Solution. Harvard Business School Press.

Basto. F., Lourenco. S., & Samagaio. A. (2018). Management control systems use as boundary, diagnostic and interactive systems in the financial services industry – an exploratory analysis. [Online article]. [Cited 8.2.2019]. Available: https://www.iseg.ulisboa.pt/aquila/getFile.do?method=getFile&fileId=646689&_request_checksum_=7e9ab7fb4935a751f89151b998b07274d99ce44d.

Beckman, C. (2006). The influence of founding team company affiliations on firm behavior. Academy of Management Journal, 49(4), 741-758.

Bedford, D.S., Malmi, T., & Sandelin, M. (2016). Management control effectiveness and strategy: An empirical analysis of packages and systems. Accounting, Organizations and Society, 51, 12-28.

Bedford, D.S. (2015). Management control systems across different modes of innovation: Implications for firm performance. Management Accounting Research, 28, 12-30.

Benner, M. J. & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. Academy of Management Review, 28(2), 238-256.

Birkinshaw, J. & Gibson, C. B. (2004). Building Ambidexterity into an Organization. MIT Sloan Management Review, 45(4), 47-55.

Birkinshaw, J. & Gupta, K. (2013). Clarifying the Distinctive Contribution of Ambidexterity to the Field of Organization Studies. Academy of Management Per- spectives, 27(4), 287-298.

Bisbe, J. & Otley, D. (2004). The effects of the interactive use of management control systems on product innovation. Accounting, Organizations and Society, 29(8), 709-737.

Bisbe, J., Batista-Foguet, J. & Chenhall, R. (2006). Defining management accounting constructs: A methodological note on the risks of conceptual misspecification. Accounting, Organizations and Society, 32, 789–820.

Bledow, R., Frese, M., Anderson, N., Erez, M., & Farr, J. (2009). A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. Industrial and Organizational Psychology, 2(3), 305-337.

Bloodgood, J. & Chae, B. (2010). Organizational paradoxes: Dynamic shifting and integrative management. Management Decision, 48(1), 85-104.

Bonner, J., Ruekert, R. W., & Walker, O. C. (2002). Upper management control of new product development projects and project performance. Journal of Product Innovation Management, 19(3), 233-245.

Bremser, W. & Barsky, N.P. (2004) Utilizing the balanced scorecard for R&D performance measure- ment. R&D Management, 34, 3, 229–238.

Brion. S., Mothe. C. & Sabatier. M. (2010). [online document]. [Cited 22.1.2018]. Available http://hal.univ-savoie.fr/file/index/docid/936801/filename/IJIM2010.pdf.

Bruining, H., Bonnet, M., & Wright, M. (2004). Management control systems and strategy change in buyouts. Management Accounting Research, 15, 155-177.

Cantarello. S., Martini. A., and Nosella. A. (2012). A Multi-Level Model for Organizational Ambidexterity in the Search Phase of the Innovation Process. [online document]. [Cited 22.1.2018]. Available https://www.nonprofitjourney.org/uploads/8/4/4/9/8449980/a_multi-level_model_of_organizational_ambidexerity.pdf.

Cao, Q., Gedaljovic, E. and Zhang, H. (2009). Unpacking Organizational Ambidexterity: Dimesions, Contingencies, and Synergistic Effect). [online document]. [Cited 22.1.2018]. Available http://www.sfu.ca/~erg/index_files/research/ambidexterity.pdf.

Chenhall, R. & Morris, D. (1995). Organic decision and communication processes and management accounting systems in entrepreneurial and conservative business organizations. Om. Int. J. Manage. Sci. 23 (5), 485–497.

Chebbi, H., Yahiaoui, D., Vrontis, D. and Thrassou, A. (2015). Building Multiunit Ambidextrous Organizations—A Transformative Framework. Human Resource Management, vol. 54 no. (S1), 155-177.

Christensen, C. (1997). Innovator's dilemma: When new technologies cause great firms to fail. Cambridge, MA: Harvard Business School Press Books.

Christensen C. & Overdorf, M. (2000). Meeting the challenges of disruptive change. Harvard Business Review, 78(2): p. 66.

Darroch, J. & McNaughton, R. (2002). Examining the link between knowledge management practices and types of innovation, Journal of intellectual capital, vol. 3, no. 3, 210-222.

Dougherty, D. (1992). Interpretive barriers to successful product innovation in large firms. Organization Science, 3: 179-202.

Deloitte (2016). Banking reimagined. How disruptive forces will radically transform the industry in the decade ahead. [Online document]. [Cited 26.2.2019]. Available https://www2.deloitte.com/content/dam/Deloitte/tr/Documents/financial-services/fsi-banking-industry-outlook-2016.pdf.

Deloitte (2015). Banking on the future. Vision 2020. [Online document]. [Cited 26.2.2019]. Available https://www2.deloitte.com/content/dam/Deloitte/in/Documents/financial-services/in-fs-deloitte-banking-colloquium-thoughtpaper-cii.pdf.

Dewar. R. & Dutton. J. (1986). The Adoption of Radical and Incremental Innovations: an Empiritical Analysis. [online document]. [Cited 4.4.2018]. Available https://www.researchgate.net/profile/Jane_Dutton/publication/227445689_The_Adoption_of_Radical_and_Incremental_Innovations_An_Empirical_Analysis/links/57497cb708ae5bf2e63f1179/The-Adoption-of-Radical-and-Incremental-Innovations-An-Empirical-Analysis.pdf.

Duncan, R. (1976). The ambidextrous organization: Designing dual structures for innovation. In R.H. Killman, L.R. Pondy, & D. Slevin (Eds.), The Management of Organization: Volume 1, (pp. 167- 188). New York: North Holland.

Eisenhardt, K. M. (2000). Paradox, spirals, ambivalence: The new language of change and pluralism. Academy of Management Review, 25: 703-705.

Eskola, J. & Suoranta, J. (1998). Johdatus laadulliseen tutkimukseen. Tampere: Vastapaino.

EY (2017). Banking in the Age of Disruption. [Online document]. [Cited 26.2.2019]. Available https://www.ey.com/Publication/vwLUAssets/ey-banking-in-the-age-of-disruption/$FILE/ey-banking-in-the-age-of-disruption.pdf.

Fasnacht (2009). Open Innovation in Financial Services. [Online document]. [Cited 26.2.2019]. Available https://www.springer.com/us/book/9783540882305.

Fernholz, O. Hughes. M & Dingwall. H (2013). BAM Conference Proceedings. British Academy of Management. p. 2-19.

Forbes (2017). The Race Is On To Disrupt Traditional Banking. [Online document]. [Cited 26.2.2019]. Available https://www.forbes.com/sites/rogercrook/2017/08/16/the-race-is-on-to-disrupt-traditional-banking-2/#6e176eddd952.

Forés, B. and Camisón, C. (2016). Does incremental and radical innovation performance depend on different types of knowledge accumulation capabilities and organizational size?. Journal of Business Research, vol. 69 no. 2, 831-848.

Frow, N., Marginson, D., & Ogden, S. (2005). Encouraging strategic
behaviour while maintaining management control: Multi-functional project teams, budgets, and the negotiation of shared accountabilities in contemporary enterprises. Management Accounting Research, 16, 269–292.

Fuglsang, M. (1999). The sexy biotechnology: a postmodern phenomenological observation of contradiction and meaning. In Modern Organizations and Emerging Conundrums: Exploring the Postindustrial Subculture of the Third Millenium (pp. 83-90). Lexington Books US.

Gibson. C & Birkinshaw J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. [online document]. [Cited 19.1.2018]. Available http://www.hbs.edu/faculty/Publication%20Files/O%27Reilly%20and%20Tushman%20AMP%20Ms%20051413_c66b0c53-5fcd-46d5-aa16-943eab6aa4a1.pdf.

Ghoshal S. and Bartlett C. (1997) The Individualized Corporation: A Fundamentally New Approach to Management.

Ghoshal, S. & Bartlett. C. (1994). Linking organizational context and managerial action: The dimensions of quality of management. Strategic Management Journal, 15: 91-112.

Ginsberg, A., & Buchholtz, A. (1990). Converting to for-profit status: Corporate responsiveness to radical change. [online document]. [Cited 27.2.2018]. Available from https://ezproxy.cc.lut.fi/docview/199827325?accountid=27292.

Grabner, I., & Moers, F. (2013). Management control as a system or a package? Conceptual and empirical issues. Accounting, Organizations and Society, 38(6-7), 407–419.

Grönfors, Martti (2008) Laadullisen tutkimuksen kenttätyömenetelmät. Toim. Vilkka, Hanna. Hämeenlinna: SoFia.

Gschwantner, S. & Hiebl, M. (2016). Management control systems and organizational ambidexterity. Journal of Management Control, 27(4), 371.

Guenther, T.W. (2013). Conceptualisations of 'controlling' in German-speaking countries: analysis and comparison with Anglo-American management control frameworks. Journal of Management Control, 23(4), 269-290.

Gupta, A.K., K.G. Smith, C.E. Shalley. (2006). The interplay between exploration and exploitation. Acad. Management J. 49 693-708.

Hansen, M.T., (2002). Knowledge networks: explaining effective knowledge sharing in multiunit companies. Org. Sci. 13, 232–248.

Havermans, L.A., Den Hartog, D.N., Keegan, A., & Uhl-Bien, M. (2015). Exploring the role of Leadership in Enabling Contextual ambidexterity. Human Resource Management, 54(1), 179-200.

He. Z. & Wong. P. (2004). Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis. [online document]. [Cited 19.1.2018]. Available https://pubsonline.informs.org/doi/abs/10.1287/orsc.1040.0078?journalCode=orsc.

Heidric, D. & Struggless, D. (2013) Leading Culture Change in Banking. [online document]. [Cited 4.4.2018]. Available http://www.heidrick.com/Knowledge-Center/Publication/Leading-Culture-Change-in-Banking.

Hirsjärvi, S., Remes, P. & Sajavaara, P. (2004) Tutki ja kirjoita. 10. osin uud. p. Kustannusosakeyhtiö Tammi, Helsinki.

Huy, Q. N. (2002). Emotional balancing of organizational continuity and radical change: The contribution of middle managers. Administrative science quarterly, 47(1), 31-69.

Inkpen, A. & K. Tsang. (2005). Social capital, networks, and knowledge transfer. Acad. Management Rev. 30(1) 146–165.

Jansen. J., Tempelaar, P. Van den Bosch, F. & Volberda, H. (2009). Structural differentiation and ambidexterity: The mediating role of integration mechanisms. [online document]. [Cited 19.1.2018]. Available https://www.researchgate.net/publication/220520909_Structural_Differentiation_and_Ambidexterity_The_Mediating_Role_of_Integration_Mechanisms.

Jansen, J., van den Bosch, F, & Volberda, H. (2006). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. Management Science, 52(11): 1661-1674.

Jørgensen. B. & Messner. M (2009). Management Control in New Product Development: The Dynamics of Managing Flexibility and Efficiency. Journal of Management Accounting Research: December 2009, Vol. 21, No. 1, 99-124.

Kang, S.-C., & Snell, S. A. (2009). Intellectual capital architectures and ambidextrous learning: A framework for human resource management. Journal of Management Studies, 46(1), 65-92.

Katila. R & Ahuja. G. (2002). Something old, something new: A longitudinal study of search behavior and new product introduction. [online document]. [Cited 19.1.2018]. Available http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.335.1453&rep=rep1&type=pdf.

Kauppila, O. (2010). Creating ambidexterity by integrating and balancing separate interorganizational partnerships. [online document]. [Cited 19.1.2018]. Available http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.891.3131&rep=rep1&type=pdf.

Khazanchi. S, Lewis. M. & Boyer. K (2007). Innovation-Supportive Culture: The Impact of Organizational Values on Process Innovation. [Online document]. [Cited 26.2.2019]. Available https://www.researchgate.net/publication/222011128_Innovation-Supportive_Culture_The_Impact_of_Organizational_Values_on_Process_Innovation.

Korstjens, I. & Moser, A. (2018). Series: Practical guidance to qualitative research. [online document]. [Cited 15.1.2019]. Available https://www.tandfonline.com/doi/full/10.1080/13814788.2017.1375092.

KPMG (2017). Setting course in a disrupted marketplace. [Online document]. [Cited 26.2.2019]. Available https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/04/setting-course-in-a-disrupted-marketplace.pdf.

Laine, M., Bamberg, J. & Jokinen, P. (2007). Tapaustutkimuksen taito. Helsinki: Gaudeamus.

Lavie, D. & Rosenkopf, L. (2006). Balancing exploration and exploitation in alliance formation. Academy of Management Journal, 49: 797-818.

Leonard-Barton, D (1992). Core capabilities and core rigidities. Strategic Management Journal, Summer special issue, 111-126.

Levinthal, D. A., & March, J. G. (1993). The myopia of learning. Strat. Mgmt. J. Strategic Management Journal, 95-112.

Lewis. M. (2000). Exploring Paradox. Toward More Comprehensive Guide. [online document]. [Cited 26.3.2018]. Available https://www.researchgate.net/profile/Marianne_Lewis3/publication/246147274_Exploring_Paradox_Toward_a_More_Comprehensive_Guide/links/571a467a08aee3ddc568f2e9/Exploring-Paradox-Toward-a-More-Comprehensive-Guide.pdf.

Lewis. M. & Smith. W. (2014). Paradox as a Meta-Theoretical Perspective: Sharpening the Focus and Widening the Scope. [online document]. [Cited 29.3.2018]. Available http://openaccess.city.ac.uk/17892/3/Paradox%20as%20a%20Metatheoretical%20Perspective_JABS%20Second%20Round%20Final.pdf.

Li, Y. & Schoenmakers. W (2008). [online document]. [Cited 29.3.2018]. Available https://www.researchgate.net/publication/227635773_Exploration_and_Exploitation_in_Innovation_Reframing_the_Interpretation.

Liselore, H., Keegan, A. & Uhl-bien. M. (2015). [online document]. [Cited 29.5.2018]. Available http://irserver.ucd.ie/bitstream/handle/10197/9352/HRM_PostPeerReview.pdf?sequence=1.

Lu, Y., and Ramamurthy, K. (2011), "Understanding the link between information technology capability and organizational agility: An empirical examination", MIS Quarterly, Vol.35, No.4, pp.931-954.

Lubatkin, M., Simsek, Y. Ling, J. &. Veiga. (2006). Ambidexterity and performance in small-to-medium-sized firms: The pivotal role of top management team behavioral integration. J. Management 32 646–672.

Luger, J., Raisch, S., & Schimmer, M. (2018). Dynamic Balancing of Exploration and Exploitation: The Contingent Benefits of Ambidexterity. Organization Science, 29, 449-470.

Luscher, L., & Lewis, M. (2008). Organizational change and managerial sensemaking: Working through paradox. Academy of Management Journal, 51: 221–240.

Martyn. P, Sweeney. B & Curtis. E (2016). Strategy and control: 25 years of empirical use of Simons' Levers of Control framework. Journal of Accounting & Organizational Change, Vol. 12 Issue: 3, pp.281-324.

McGrath, R. (2001). Exploratory learning, innovative capacity and man- agerial oversight. Acad. Manage. J. 44, 118–131.

McNamara, P. & Baden-Fuller, C. (1999). Lessons from the Celltech case: balancing knowledge exploration and exploitation in organizational renewal. British Journal of Management, 10, 4, 291–307.

McNamara, P. and Baden-Fuller, C. (2007). Share- holder returns and the exploration-exploitation di- lemma: R&D announcements by biotechnology firms. Research Policy, 36, 4, 548–565.

Malmi, T & Brown, D. A. (2008) Management Control Systems as a Package – Opportunities, Challenges and Research Directions. [online document]. [Cited 6.4.2018]. Available http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.692.6083&rep=rep1&type=pdf.

March, J. Sproull, L. & Tamuz, M. (1991). Exploration and exploitation in organizational learning. Organization Science, 2, 71–87.

Marginson, D. (2002). Management control systems and their effects on strategy formation at middle-management levels: evidence from a U.K. organisation. Strategic Management Journal, 23, 1019-1031.

McCarthy, Ian P & Gordon, Brian R. (2011). Achieving contextual ambidexterity in R&D organizations: a management control system approach. [online document]. [Cited 15.1.2019]. Available https://search-proquest-com.ezproxy.cc.lut.fi/docview/878482273?pq-origsite=primo.

McGill, M., Slocum, & Lei, D. (1992). Management practices in learning organizations. Organization Dynamics, 21(1), 5-17.

Merchant. K. & Van der Stede. W. (2007). Management Control Systems – Performance. Measurement, Evaluation and Incentives. Prentice Hall. New Jersey. Second ed.

Mom, T. Van Den Bosch. F. & Volberda, H. (2007). Investigating Managers' Exploration and Exploitation Activities: The Influence of Top-Down, Bottom-Up, and Horizontal Knowledge Inflows. Journal of Management Studies, 44, 910-931.

Mom, T., van den Bosch & F. & Volberda, H.W. (2009). Understanding Variation in Managers' Ambidexterity: Investigating Direct and Interaction Effects of Formal Structural and Personal Coordination Mechanisms. Organization Science, 20, 812–28.

Morse. M, Barrett. B Mayan. M Olson. O & Sprier. S. (2002). Verification Strategies for Establishing Reliability and Validity in Qualitative Research. [online document]. [Cited 15.1.2019]. Available https://sites.ualberta.ca/~iiqm/backissues/1_2Final/pdf/morseetal.pdf.

Mundy, J., (2010). Creating dynamic tensions through a balanced use of management control systems. Account. Org. Soc. 35, 499–523.

Nadler, D., & Tushman, M. (1997). Competing by design: The power of organizational architecture. New York: Oxford University Press.

Nerkar, A. and Roberts, P. (2004). Technological and Product-Market Experience and the Success of New Product Introductions in the Pharmaceutical Industry. Strategic Management Journal, 25, 779–99.

Nonaka, I., & Toyama, R. (2002). A firm as a dialectical being: Towards a dynamic theory of a firm. Industrial and Corporate Change, 11: 995–1009.

Nordea (2019). [online document]. [Cited 8.4.2019]. Available https://www.nordea.com/fi/tietoa-nordeasta/keita-olemme/organisaatio/.

Norman. D. & Verganti. R. (2012). Incremental and Radical Innovations: Design Research Versus Technology and Meaning Change. [online document]. [Cited 4.4.2018]. Available http://www.jnd.org/dn.mss/Norman%20&%20Verganti.%20Design%20Research%20&%20Innovation-18%20Mar%202012.pdf.

OECD (2017). Defining innovation. [online document]. [Cited 25.1.2019]. Available https://www.oecd.org/site/innovationstrategy/defininginnovation.htm.

OECD/Eurostat (2005), Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data. [online document]. [Cited 26.1.2018]. Available http://dx.doi.org/10.1787/9789264013100-en.

Ogrean, C. (2016) "Solving Strategic Paradoxes through Organizational Ambidexterity-A Foray into the Literature.") [online document]. [Cited 19.1.2019]. Available https://www.degruyter.com/downloadpdf/j/sbe.2016.11.issue-2/sbe-2016-0024/sbe-2016-0024.pdf.

O'Reilly. C. Harreld. B & Tushman. M (2009). IBM and emerging business opportunities. [online document]. [Cited 15.1.2019]. Available http://web.b.ebscohost.com.ezproxy.cc.lut.fi/ehost/pdfviewer/pdfviewer?vid=0&sid=a3ce1845-926e-4a8b-8b91-48698bf3bdf7%40pdc-v-sessmgr01.

O'Reilly C. Harreld. B. & Tushman, M. (2009). Organizational ambidexterity: IBM and emerging business opportunities. California Management Review, 51(4), 75-99.

O'Reilly, C. & Tushman, Michael L. (2004). The ambidextrous organization. Harvard Business Review, April: 74-83.

O'Reilly, C. & Tushman, Michael L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. Research in Organizational Behavior, 28: 185-206.

O'Reilly, C. & Tushman, M. (2011). Organizational Ambidexterity in Action. How Managers explore and exploit. [online document]. [Cited 4.3.2019]. Available https://www.hbs.edu/faculty/conferences/2015-strategy-research/Documents/Organizational%20Ambidexterity%20in%20Action.pdf.

O'Reilly. C. & Tushman. M. (2013). Organizational Ambidexterity: Past, Present and Future. [online document]. [Cited 15.11.2019]. Available http://www.hbs.edu/faculty/Publication%20Files/O%27Reilly%20and%20Tushman%20AMP%20Ms%20051413_c66b0c53-5fcd-46d5-aa16-943eab6aa4a1.pdf.

Osborn, C. (1998). Systems for sustainable organizations: emergent strategies, interactive controls and semi-formal information. J. Man- age. Stud. 35 (4), 481–509.

Ouchi, W.G. (1979). A conceptual framework for the design of organizational control mechanisms. Management Science, 25(9), 833-848.

Ouchi, W.G. (1980). Markets, bureaucracies, and clans. Administrative Science Quarterly, 25(1), 129– 141.

Panagopoulos, G. (2016). Aspects of Organizational Ambidexterity. [online document]. [Cited 5.4.2018]. Available http://isma.info/uploads/files/005-aspects-of-organizational-ambidexterity-george-panagopoulos.pdf.

Papachroni, A., Heracleous, L., & Paroutis, S. (2016). In pursuit of ambidexterity: Managerial reactions to innovation–efficiency tensions. [online document]. [Cited 19.1.2018]. Available http://www.heracleous.org/uploads/1/1/2/9/11299865/in_pursuit_of_ambidexterity_-_hum_rel_-_2016.pdf.

Papachoni, A Heracleous, L & Paroutis, S. (2018). Organizational Ambidexterity Through the Lens of Paradox Theory: Extending the Reseach Agenda. [online document]. [Cited 26.3.2018]. Available http://www.heracleous.org/uploads/1/1/2/9/11299865/ambidexterity_through_paradox_lens_-_jabs_-_14_august_2014.pdf.

Popadić, M. & Milohnić, I. (2016) The structure of the organizational ambidexterity field: qualitative literature review, article co-citation analysis and science mapping. [online document]. [Cited 15.1.2019]. Available https://search-proquest-com.ezproxy.cc.lut.fi/docview/1807690484.

Quinn, R. E. (1988). Mastering the paradoxes and competing demands of high performance. San Francisco: Jossey- Bass.

Raisch & Birkinshaw (2008). [online document]. [Cited 19.1.2018]. Available http://www.hbs.edu/faculty/Publication%20Files/O%27Reilly%20and%20Tushman%20AMP%20Ms%20051413_c66b0c53-5fcd-46d5-aa16-943eab6aa4a1.pdf.

Raisch, Birkinshaw, Gilbert & Tushman (2009). Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance. [online document]. [Cited 15.1.2019]. Available https://www.researchgate.net/publication/220520947_Organizational_Ambidexterity_Balancing_Exploitation_and_Exploration_for_Sustained_Performance.

Raisch. S, Birkinshaw. J Probst. G & Tushman. M. (2009). Organizational ambidexterity: Balancing exploitation and exploration for sustained performance. Organization Science, 20: 685-695.

Reynaert. W. (2018). Ambidexterity and management control packages. [online document]. [Cited 15.1.2019]. Available https://biblio.ugent.be/publication/8583240/file/8583243.pdf.

Safe (2019). Welcome To Scaled Agile Framework. [Online document]. [Cited 30.4.2018]. Available https://www.scaledagileframework.com/about/.

Saaranen-Kauppinen & Puusniekka (2006a). [Online document]. [Cited 3.3.2018]. Available Saaranen-Kauppinen & Puusniekka (2006b) https://www.fsd.uta.fi/menetelmaopetus/kvali/L5_5.html.

Saaranen-Kauppinen & Puusniekka (2006b). [Online document]. [Cited 3.3.2018]. Available https://www.fsd.uta.fi/menetelmaopetus/kvali/L5_5.html.

Saaranen-Kauppinen & Puusniekka (2006c). [Online document]. [Cited 3.3.2018]. Available https://www.fsd.uta.fi/menetelmaopetus/kvali/L6_3_3.html.

Saaranen-Kauppinen & Puusniekka (2006d). [Online document]. [Cited 3.3.2018]. Available https://www.fsd.uta.fi/menetelmaopetus/kvali/L6_2.html.

Saaranen-Kauppinen & Puusniekka (2006e). [Online document]. [Cited 3.3.2018]. Available https://www.fsd.uta.fi/menetelmaopetus/kvali/L6_2_2.html.

Saaranen-Kauppinen & Puusniekka (2006f). [Online document]. [Cited 3.3.2018]. Available https://www.fsd.uta.fi/menetelmaopetus/kvali/L2_3_2_1.html.

Saaranen-Kauppinen. A. & Puusniekka. A (2006g). KvaliMOTV – laadullisen tutkimuksen elementit. [online document]. [Cited 15.1.2019]. Available https://www.fsd.uta.fi/menetelmaopetus/kvali/L1_2_2.html.

Sarkees, M. and Hulland, J. (2009). Innovation and efficiency: it is possible to have it all. Business Horizons, 52, pp. 45–55.

Scaled Agile (2019). Scaled Agile. [Online document]. [Cited 26.2.2019]. Available https://www.scaledagile.com.

Scrum (2019) What is a Product Owner? [Online document]. [Cited 26.2.2019]. Available https://www.scrum.org/resources/what-is-a-product-owner.

Seal, W. (2001). Management accounting and the challenge of strategic focus. Management Accounting Research, 12, 487–506.

Simons. R. (1995). Control in the age of empowerment. [online document]. [Cited 15.1.2019]. Available https://hbr.org/1995/03/control-in-an-age-of-empowerment.

Smith, K Wendy. L & Lewis, H Marianne. L (2012). Leadership Skills for Managing Paradoxes. Industrial and Organizational Psychology. [online document]. [Cited 29.1.2019]. Available https://www.researchgate.net/publication/263217698_Leadership_Skills_for_Managing_Paradoxes.

Smith, Wendy K. and Tushman, Michael L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. [online document]. [Cited 19.1.2019]. Available http://web.a.ebscohost.com.ezproxy.cc.lut.fi/ehost/pdfviewer/pdfviewer?vid=0&sid=fd98f590-a120-4c7a-9d75-09d11868a323%40sessionmgr4009.

Smith, W. and Lewis, M. (2011). Toward a Theory of Paradox: a Dynamic Equilibrium Model of Organizing. Available https://www.researchgate.net/profile/Wendy_Smith22/publication/274709284_Toward_A_Theory_of_Paradox_A_Dynamic_Equilibrium_Model_of_Organizing/links/5526aeb70cf229e6d635a31f.pdf.

Suarez. F. & Olivia. R. (2005). Environmental Change and Organizational Transformation. [online document]. [Cited 18.2.2019]. Available https://pdfs.semanticscholar.org/bf1f/c0cfa9fa5ebf6c19dfaeeda5fe4bccf505ae.pdf.

Tarody. D. (2016). Organizational ambidexterity as a new research paradigm in strategic management. [online document]. [Cited 15.1.2019]. Available http://unipub.lib.uni-corvinus.hu/2363/1/VT_2016n5p39.pdf.

Taylor, A. & Greve. (2006). Superman or the Fantastic Four? Knowledge combination and experience in innovative teams. Acad. Management J. 49 723–740.

Tessier, S., & Otley, D. (2012). A conceptual development of Simons' Levers of Control framework. Management Accounting Research, 23(3), 171-185.

Thomas, C.& Kaminska, R. & Mckelvey, B. (2012). Building Ambidexterity into a firm: The control/autonomy dilemma revisited.

Tornjanski. V Marinkovic. S Săvoiu & Čudanov. Z (2015). Towards sustainability: effective operations strategies, quality managemement and operational excellence in banking. [online document]. [Cited 15.1.2019]. Available https://search-proquest-com.ezproxy.cc.lut.fi/docview/1874042391?pq-origsite=primo.

Tripsas, M. (1997). Surviving radical technological change through dynamic capability: Evidence from the typesetter industry. [online document]. [Cited 19.1.2019]. Available http://www.people.hbs.edu/mtripsas/articles/Tripsas%20ICC%201997%20typeset.pdf.

Tuomela, T. (2005). The interplay of different levers of control: A case study of introducing a new performance measurement system. Management Accounting Research, 16, 293–320.

Tuomela, T. (2005). The interplay of different levers of control: a case study of introducing a new performance measurement system. Management Accounting Research, 16, 293-320.

Turner. N., Swart. J., & Maylor. M. (2013). Mechanisms for Managing Ambidexterity: A Review and Research Agenda. [online document]. [Cited 4.4.2019]. Available http://web.a.ebscohost.com.ezproxy.cc.lut.fi/ehost/pdfviewer/pdfviewer?vid=0&sid=4aa9ef4e-5dbe-46af-8468-f54ad44ba3e6%40sdc-v-sessmgr05.

Tushman and O'reilly (1996) [online document]. [Cited 19.1.2019]. Available http://web.mit.edu/curhan/www/docs/Articles/15341_Readings/Organizational_Learning_and_Change/Tushman_&_OReilly_1996_Ambidextrous_Organizations.pdf.

Tushman, M. and O'reilly, C. (2013). [online document]. [Cited 19.1.2019]. Available http://www.hbs.edu/faculty/Publication%20Files/O%27Reilly%20and%20Tushman%20AMP%20Ms%20051413_c66b0c53-5fcd-46d5-aa16-943eab6aa4a1.pdf

Tushman, M. & Romanelli, E. (1985). Organizational evolution: A metamorphosis model of convergence and reorientation. In L. L. Cummings & B. M. Star (Eds.), Research in Organizational Behavior, 7: 171-222. Greenwich, CT: Jai Press.

Verganti, R. (1997) Leveraging on Systemic Learning to Manage the Early Phases of Product Innovation Projects. R&D Management, 27, 377– 92.

Volberda, H., & Lewin, A. (2003). Co-evolutionary dynamics within and between firms: From evolution to coevolution. Journal of Management Studies, 40: 2111-2136.

Wadhwa, A., S. Kotha. (2006). Knowledge creation through external venturing: Evidence from the telecommunications equipment manufacturing industry. Acad. Management J. 49 819–835.

Weick, K., & Quinn, R. (1999). Organizational change and development. Annual Review of Psychology, 50: 361–386.

West, M. A., & Farr, J. L. (1990). Innovation at work. In M. A. West & J. L. Farr (Eds.), Innovation and creativity at work: Psychological and organizational strategies (pp. 3–13). Chichester: John Wiley & Sons.

Widener, S.K., (2007). An empirical analysis of the levers of control frame- work. Account. Org. Soc. 32 (7–8), 757–788.

Yin, R. (1994). Evaluation: A singular craft. New Directions for Program Evaluation, 61, 71–84

Yin, R. (2014). Case study research: Design and Methods. 5. Painos. Thousand oaks: SAGE Publications Inc.

Yin, R. (2016). Qualitative Research from Start to Finish. [online document]. [Cited 15.1.2019]. Available https://books.google.fi/books/about/Qualitative_Research_from_Start_to_Finis.html?id=lyCGBeo8sI8C&redir_esc=y

Ylinen, M., & Gullkvist, B.M. (2014). The Effects of Organic and Mechanistic Control in Exploratory and Exploitative Innovations. [online document]. [Cited 19.1.2019]. Available https://www.semanticscholar.org/paper/The-Effects-of-Organic-and-Mechanistic-Control-in-Ylinen-Gullkvist/f10ec4189926e997afc08d68b5bc1280773e793d.

APPENDIXES:

APPENDIX 1. Pattern 1. Management interview questions

Lever of control	Belief systems	Boundary systems	Interactive systems	Diagnostic systems
Questions (Formed based on Figure 6 information). 1. Strategic variable 2. Managerial solution	1. What are the core values and mission for the organization? 2. In what ways are they communicated to the innovation units and individual employees? - Which are the tools used to define, communicate and reinforce organizational values and unit-level purpose and direction?	1. What are the strategic risks recognized and to be avoided in the unit? 2. In what ways are they specified to the innovation unit and individual employees? - Which are the tools used to delineate the acceptable domain of activity for participants and establish limits?	1. What are the strategic uncertainties recognized in the unit? 2. In what ways are they recognized, and monitored? - Which are the tools used to focus on strategic uncertainties and to build internal pressure to break out of narrow search routines?	1. What are the "critical success factors" or specified goals and targets in the unit? 2. In what ways are goals and targets monitored? - Which are the tools used to monitor unit-level outcomes and correct deviations from pre-set standards of performance?

APPENDIX 2. Pattern 2. Employee interview questions

Lever of control	**Belief systems**	**Boundary systems**	**Interactive systems**	**Diagnostic systems**
Question (formed based on figure 6. information) 1. Desired effect of using specific lever of control.	1. What are the core values for the organization? Describe where you confront these values in your daily work?	1. Do you recognize these principles in your work? Describe the relevance of these principles in your work. Are they actively followed in your daily work? - No one is responsible for a specific feature or user story. - Agile way of working is actively promoted in your team and unit and possible deviation are actively managed. - Possible "side orders" interrupting daily work are effectively prevented" - Unit and team is operating according to Agile principles and everyone has engaged using them.	1. Describe how the following possibilities realize in your unit. - Active questioning/revising of data. - Changes are discussed and debated. - Meanings are created/shared. - Strategies are adjusted/emergence of new strategies.	1. Describe how the following actions realize in your team and unit. - Daily work in the unit is based on pre-defined goals. - The progress towards these goals is actively followed - In case of deviation, actions are adapted.

APPENDIX 3. Interview results

	Lever of control	Belief systems	Boundary systems	Interactive systems	Diagnostic systems
	Definition	Used for systematically communicate and reinforce values, purpose and direction for the organization	Used to delineate the acceptable domain of activity for participants and establish limits, based on pre-defined business risks to opportunity seeking	Used to focus attention to strategic uncertainties and to build internal pressure to break out of narrow search routines, stimulate opportunity seeking and encourage emergence of new strategic initiatives	Used to monitor organizational outcomes and correct deviations from pre-set standards of performance
	Control type	Feed-forward control	Feed-back control	Feed-forward control	Feed-back control
MANAGERIAL SOLUTION	**Strategic variable**	Core values: "Collaboration, ownership, passion, and courage."	Risks to be avoided: person related risks, risks of losing Agile way of working, risk of interruptions and interdependencies and innovation related risks	Digitalization, small agile actors, economy and business cycles and customer needs and behaviour	Increasing sales and customer satisfaction, improving digital transformation
	Managerial solution (Tools implemented)	Value mats, value-based structuring of customer feed-back, value-based structuring of employee satisfaction query, Skype- meetings, value stickers and interactive screens	Shared responsibilities, titled responsibilities, team-specific area of responsibility and titled job descriptions, a feature prisonization method and user stories	Meetings/ceremonies defined as the back-lock refinement sessions and the innovation sprints	Net flow of savings, market shares of mortgage markets/ weekly sales of new mortgages, availability, customer satisfaction
CONTROL IMPLEMENTATION	**MC tool usage** (level of usage)	In use, use is hardly endorsed by tools	Inadequate use	Inadequate use	No/hardly in use
	Desired effect(s)	Realizes	Does not fully realize	Realizes	Does not realize
	Intended outcomes	Is enabled	Is not enabled	Is enabled	Is not enabled
	Ambidextrous outcome	Limited support for exploration	Limited support for exploitation	Limited support for exploration	Limited support for exploration