The Interplay between Management Control Systems and Organizational Learning in IT startups

A multi-case study of Swedish IT Startup companies

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Abstract

The role of management control systems (MCS) in relation to company performance and learning has long been a debated issue (Davis et. al, 2009). Research regarding the recursive relationship of management control systems and organizational learning has been conducted in established companies (Kloot, 1997). We find this topic an interesting path to pursue, however within start-up companies in the IT industry due to its dynamic nature. The purpose of this study is two-fold: on the one hand it aims to explore more in-depth the roles that management control systems can have in the context of organizational learning in IT Startups, on the other it seeks to depict more clearly how MCS relate to the stages of learning: production, distribution and mobilization/memorization of knowledge. We find that MCS can have a proactive role in the production of knowledge, by guiding employee behavior and by regularly generating new information. Further, we find that MCS can have a reactive role as an outcome of learning, when they are either adopted, changed or removed. Looking at the stages of learning, knowledge is produced when various information, generated by the combined use of multiple MCS, is interpreted. In addition, the production and distribution stages are closely intertwined and occur during a longer period of time. Finally in the mobilization/memorization stage, we conclude that as MCS can be outcomes of learning, there is an indirect relationship between MCS, where some MCS influence the design and use of other MCS.

Key words: Management Control Systems, Organizational learning, Case study, Startup

Acknowledgements

Contents

1. Introduction

1.1 Background

The importance of new ventures for economic growth has been gaining attention in recent years: in 2003, 300 million nascent entrepreneurs among 40 countries were attempting to establish 192 million new firms and that over the period of 2000-2003, four out of five new firms were expected to create new employment opportunities (Global Entrepreneurship Monitor , 2003). In 2013, OECD conducted a study in Latin America which suggested that startups within the Information Technology sectors are important as they can contribute to job opportunities, but also bringing innovation and knowledge-intensive products and services to market (OECD, 2013). Indeed, rapid advances in information technologies—computers, telecommunications networks, and other digital systems— have vastly increased our capacity to know, achieve, and collaborate (Attali, 1992; Brown, 2000).

However, highly dynamics environments also entail that IT as well as all companies face great challenges, as they are exposed to risks and uncertainties (OECD, 2013): entire industries need to continuously re-invent themselves in order to be better aligned with the shifting environment and demands (Euske et al., 1993; Hames, 1994; Marquardt & Reynolds, 1994). In light of this, the U.S. Small Business administration reported that nearly two-thirds of new firms last for two years and half last four years (Bradley & Cowdery, 2004). A study conducted by Small Business Developer Center, University of Tennessee Research, looked closely at a sample of IT startups companies and found that only 37% are still in business after four years since founding, where lack of planning was one of the main issues (Finance New Mexico, 2013; Statisticbrain, 2013; York, 2013). Similarly, Otley (1994) argue that organizations should continually develop new answers to address central strategic and operational issues, as new strategies need to be developed in order to adapt to new contexts.

Many researchers have highlighted the importance of management control systems to support companies in achieving growth and adapting to new contexts (Simons, 1995; Flamholtz and Randle, 2000). In addition, Davila & Foster (2005) suggest that when startup companies are growing, the need for formalizing control systems becomes imperative as direct supervision becomes too complex: failure to properly manage this crisis is related to dampened growth and even liquidation. Further, Davis, Eisenhardt, & Bingham (2009) find that entrepreneurial organizations should quickly add structure in all environments, and conclude it is better to side of too much structure (efficiency) than on the side of too little (flexibility), as performance gradually fades with too much structure but drops catastrophically with too little. In other words, management control systems play a vital role in

ensuring organizationas adapt to environmental change and survive (Lowe, 1971; Davila & Foster, 2005).

In order for organizations to change to adapt to their environment, they need to gain new knowledge (Huber, 1991) that serves as a basis for change, hence *organizational change*, can also be considered equivalent to *organizational learning* (Argyris, 1977; 1990; Senge, 1990). Theorists have recognized the strategic importance of organizational learning as a means of providing a sustainable competitive advantage through strategic renewal (Crossan et al. 1999), and attempts have been made to study the linkage between management control systems and organizational learning; Kloot (1997), Batac & Carassus (2009) were one of the first in researching the linkage between management control systems and organizational learning in established and public companies in the public sector. However, research around within this field on IT startup companies remains an area yet to be explored[1]. We argue that this topic is extremely relevant for startup companies, since with limited capital they need to learn quickly and fast in order to survive and grow (Greiner, 1972). The Information Technology sector is also relevant due to its highly dynamic nature that is prone to change. Thus, in this paper, we aim to further explore the linkage between management control system and organizational learning in the context of IT startup companies.

1.2 Definitions

In order to avoid any misunderstandings, several keywords that will be used recurrently in this study will be defined in this section:

Adoption/formalization of management control systems[2] (MCS): The terms "adoption", "formalization" and "emergence" are all used interchangeably by Davila & Foster (2005; 2007), which all suggest that adoption refers to when MCS are implemented "*for the first time*", usually when the company goes from birth to early stage in the life cycle (Davila et al, 2009, p.324). Hence, in this report, we consider adoption as when an MCS is adopted formally[3] for the first time[4]. Other relevant terms used: "Changed Management control systems" describes when existing management control systems change in its design, either regarding methods or objectives. "Removed Management Control Systems" described when a formal management control systems are removed or de-formalized (back to an informal control).

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[1] When the thesis authors searched the key words "organizational learning" AND "management control systems" AND "IT startups" in Google Scholar, No results were found. Also, as there are related words for "IT startups", a few other combinations were also tested with "tech-startups", "Information Technology-startups" etc. Dated 2013-11-27

[2] In this thesis, the closely related words will be used interchangeably: Management control systems (MCS), management control, control systems, control(s), system(s), control processes

[3] Our interpretation of the term "formal" will be further discussed in the methodology section

Organizational learning[5]: Following the definition provided by Kloot (1997), based on theories initially proposed by Argyris (1977), Senge (1990), Marquardt and Reynolds (1994) and Hames (1994), organizational learning is defined as the process by which the organization: "*1) detects problems both within the organization and with the organization's fit with the environment, and detects environmental changes which will result in a lack of fit between the organization and the environment; and 2) determines the solutions to problems and how to adapt to environmental changes*." (Kloot, 1997, p.49). Hence, *organizational learning* is used interchangeably with *organizational change* Recognizing the various perspectives of organizational learning (Filstad, 2012), in this study, we have chosen to view organizational learning from an explanatory perspective with an organizational focus (Shipton, 2006), where the process of organizational learning is defined as consisting of different learning stages, production, distribution and memorization of knowledge (Huber, 1991; Kloot, 1997; Batac & Carassus, 2009). A more elaborate discussion will be presented under the literature review section.

1.3 Problem discussion

The individual academic areas of organizational learning and management control have been frequently discussed[6]. However, research examining the relationship between "management control systems" and "organizational learning" is limited (Kloot, 1997; Batac & Carassus, 2009): only 1900 hits were found on Google Scholar[7], with Kloot (1997) as the most cited author with 241 citations. Lastly, no results were found[8] when typing "management control systems", "Organizational Learning" and "IT startups" together, indicating a niched area where further theoretical as well as practical contributions could potentially be made.

The existing literature combining the two fields has mostly discussed the proactive and reactive role of MCS in organizational learning. Some authors suggest that MCS changed in a passive way to reflect environmental change (Den Hertog, 1978). Kloot (1997) looks more specifically at the proactive role of MCS and suggest that "*the use of apprioripate management control systems can facilitate learning*" (Batac and Carassus, 2009, p.102). When designed inappropriately, they hinder learning.

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[5] In this thesis, the closely related words will be used interchangeably: Organizational learning, organizational change, learning, learning stages, organizational learning stages

[6] When the thesis authors searched the keyword "organizational learning" in Google Scholar, 293 000 hits were found, dated 2013-11-27

[7] When the thesis authors searched the keywords "organizational learning" AND "management control systems" in Google Scholar, 1900 hits were found, dated 2013-11-27. Similar keywords were also combined, such as control and knowledge sharing etc, but few results were found.

[8] When the thesis authors searched the key words "organizational learning" AND "management control systems" AND "IT startups" in Google Scholar, No results were found. Also, as there are related words for "IT startups", a few other combinations were also tested with "tech-startups", "Information Technology-startups" etc. Dated 2013-11-27

However, these authors did not portray in detail how control systems facilitate the learning proces. Hence, we seek to explore these issues further.

1.4 Purpose

Given the problem discussion, we aim to explore two closely related issues:

> ➢ Explore more in-depth the proactive and reactive roles that management control systems can have in the context of organizational learning

> ➢ Depict and illustrate more in-depth how MCS proactively stimulate the stages of organizational learning and how they reactively can be affected by learning

Since the terms "proactive" and "reactive" can take on varying meanings in different academic fields[9], we would like to clarify that our interpretation of these terms follow the definitions presented by Kloot (1997)[10] and presented in detail in section 2.3.

Hence, we hope to contribute to the existing literature in the fields of management control systems in startup companies and organizational change and learning.

1.5 Research question

Following the purpose of this study, two research questions were formulated:

> 1. *What are the roles of Management Control Systems in Organizational Learning in IT Startups?*

> 2. *How do Management Control Systems relate to the stages in organizational learning in IT startups?*

1.6 Scope of the study

As explained in the introduction, we find it interesting to examine the more positive relationship between organizational learning and management control systems. Hence this report will not closely examine occasions where management control systems hinder the process of learning. Moreover, we have chosen to focus on formal management controls systems, and therefore the roles of informal, social and cultural controls in organizational learning will not be covered either.

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[9] For instance from organizational learning perspective, proactive can be related to slack search and reactive to problemistic search

[10] Kloot (1997) described multiple view, where the our definition of proactive stems from her view of management control systems can be used "*proactive in the management of organizational change by suggesting new possibilities […] by providing a means of Looking ahead, thinking, removing unrecognized biases*" (p.54). Also, our understanding of reactive comes from her description of "*control systems change in response to strategic changes in a reactive manner*". (p.54).

1.7 Disposition

This thesis is structured as followed:

Chapter two: Theoretical framework

Chapter two will present an overview of relevant literature as well as relevant models that will be used to analyze our empirical findings.

Chapter three: Methodology

The chosen methodology of this study will be motivated and described, including research approach, case study selection and presentation, data collection and documentation, as well as data coding and analysis. Lastly, we will critically reflect on the quality and credibility of our study.

Chapter 4: Empirical findings

The empirical findings are structured according to our research questions. The first part of the empirical results will aim to describe the general roles of MCS with regards to organizational learning. The second part will focus more specifically on certain events/changes that have occurred in our case studies, so as to best illustrate the linkages between MCS and the process of learning.

Chapter 5: Analysis

In chapter five, we will analyze the results presented in chapter four (Empirical results) mainly based on the theories presented in chapter two (Theoretical framework). In this chapter, the analysis is structured according to the outline of the research questions.

Chapter 6: Discussion

Based on our analysis, we will discuss the applicability of our chosen theoretical frameworks to our case studies, as well as further problematize the implications of our findings. We will conclude this chapter by presented a revised and synthesized model that aims to combine both our research questions.

Chapter 7: Conclusion

The main findings of this study will be summarized and limitations of the study will be highlighted. Theoretical as well as practical implications will be discussed, and finally our suggestions for future research will be presented.

2. Theoretical framework

The literature review presented is divided into three parts. First, an overview of relevant theories of management control systems in the startup context will be presented. Second, relevant theories within the topic of organizational learning will be summarized. Third, frameworks bridging these two theoretical fields will be explored.

2.1 Literature review of Management Control Systems

In the early concepts introduced regarding control systems, control was defined as "the instruction and guidance of the organization and the direction and regulation of its activities" (Davis, 1928, p.82). Moreover, the authors presented control as a process that has an objective (to identify the desired outcome), a procedure (to plan, to organize and to determine how and when a task is going to be done), and an appraisal (to evaluate the performance). During the 1980's, the concept of management control broadened to include perspectives of agency theory developed by Merchant & Simons (1986). Simons (1994, 1995) later also added the strategic aspect of management control through the introduction of the "levers of control". Simons' approach also offered an integrated performance measurement system (Berry et al., 2009). Simons (1994) argues that management control systems are used to manage evolutionary and revolutionary organizational change. In his publication "levers of control", Simons (1995) offers a more comprehensive framework emphasizing primarily the formal modes of control. Simons (1995) defines the Management Control Systems as– "*formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities*" (Simons, 1995, p.5). Similarly, other authors view formalized management control systems as "recurrent and information-based" (Nelson & Winter, 1982; Zollo & Winter, 2002).

Four types of Management Control Systems were introduced by Simons (1995): 1) belief systems, with "*a purpose to define, to communicate and to reinforce an organization's core values and purpose and direction for the organization*" (Simons, 1994, p.170); 2) boundary system, used to establish rules and minimum standards explicitly in an organizations, for example codes of conduct; 3) diagnostic control system, a formal feedback system used to monitor outcomes, to evaluate the progress with its preset objectives and to take corrective measure if deviations occur. Simons (1995) suggested that intelligence systems, business plans and standard accounting systems are examples of systems used in organizations as diagnostic tools; 4) and interactive control system, focusing on strategic uncertainties, a formal system used by top managers to devote regular managerial attention and to personally involve themselves in the decision-making activities by the employees. To further elaborate the interactive control systems, Simons (1995) listed four conditions of how top

managers can make diagnostic control system interactive: i) "ensuring that system is an important and recurring agenda to discuss with employees"; ii) "ensuring that system is a regular focus of attention by operating managers throughout the organization; iii) "participating in face-to-face meetings with employees". iv) "continually challenging and debating data, assumptions, and action plans" (Simons, 1994, p.172).

Five main questions addressing organizational performance issues were suggested by Otley (1999), building on his previous work in the field of management control theories. The five questions address the topics: goal and objectives; strategy and plan; performance and measurements; rewards; information flow. The author also mentioned that the organization need to continually find new answers to these questions, due to the fact that the environment is "*constantly changing and new strategies need to be developed to cope with new operating environments."* (Otley D. , 1999, p.365).

The theoretical research of management control systems has traditionally focused on large established companies, for example studies by Simons (1995). Only recently, various researchers have devoted attention to the emergence of management control systems in startup companies (Davila & Foster, 2005). In the following section, we will present an overview of the management control theories in startups as well as explain our chosen model.

2.1.1 An overview of MCS literature in a start-up context

Flamholtz & Randle (2000) suggest that start-up companies during their early stages do not need formal controls as relatively small groups can achieve efficient control through informal management and social norms. However, as the companies grow, transitions from the informal management to adopting formal management practices become an essential part of the growth (Baron et al. 1999). Similarly, Greiner, (1972) suggested that the first transition of when the adopting of Management Control Systems occurs is at the end of the first growth phase, when information management is no longer functions as an efficient mode of control. Cardinal et al. (2004) describe how the control approach evolves from informal to formal in a case study of a growth firm. Where Greiner's (1972) crisis of control had not yet happened, an informal management approach was used as (1) the informal interactions are well-understood but not coded, (2) formal systems might harm creativity, (3) not large enough to grant MCS, and (4) management team did not have the knowledge to implement these systems.[11] Acknowledge the important of informal management control argued by various authors, in this study, we focus primarily on formal management control systems.

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[11] In this study, we focus only on formal management control systems. However, we acknowledge the important of informal management control argued by various authors (Collier, 2005; Sandino, 2008).

Various authors have attempted to explain the formalization of management control systems in startup companies. Moores & Yuen (2001) map the type of management accounting systems throughout the lifecycle of firms. Baron et al., (1999) found that size is significant in explaining the speed of adoption in 17 out of 25 tested Human resources policies and in explaining the number of systems adopted at the end of the first year. In particular, they identify the transition from birth to growth as the point at which these systems are formalized. Sandino (2007) examines how time-to-adoption of MCS in retail firms depends on their strategy given a set of common systems being adopted. Sandino (2007) further comments that companies with a cost leadership strategy are more likely to implement Cost MCS an companies with a differentiation strategy are more likely to adopt Revenue MCS. Yet, the most comprehensive research was conducted by Davila & Foster (2005; 2007) in their multiple publications. Thus, we choose to mainly build our study on Davila & Foster's research, with relevant extract from other authors.

2.1.2 Theoretical framework by Davila & Foster

Davila (2000) suggested that management control systems produce different information, for examples customer-related, product-related etc. Drawing upon earlier work, he further mention control systems can "*fulfill an information role to facilitate learning and experimentation* (Davila, 2000, p.386). Further, the context of this study was new product development, a dynamic and high uncertainty environment. In this context, the author argue that management control systems are used the close "information gap" between the information needed and the information the organization already possess (p.387). The different type of information, were all identified to be update with vary frequency, where product-related information were relatively high in frequency.

Based on a sample of 78 start-up companies, Davila & Foster (2007) present a detailed list of the main formal management control systems found in start-up companies, see appendix 1. The list is based on earlier work from Baron (1999) and Horngren et al., (2006). Davila & Foster (2005) define these systems as   formalized when   "*having documented a process and/or periodically and purposefully executing the process*". The systems are grouped into eight different categories: financial planning, human resource planning, strategic planning, financial evaluation, human resource evaluation, product development, sales, and partnerships. Davila & Foster (2007), drawing upon various authors (Moores & Yuen, 2001; Greiner, 1972; Baron et al., 1999), suggested a few factors that is associated with faster adoption of management control systems: size, age, presence of venture capital funding, CEO experience, replacement of CEO, past pre-revenue stage etc.

Cardinal et al. (2004) suggest that "*much of the literature has virtually ignored the origins and evolution of organizational control*" (p.411). In a later study, Davila et al. (2009) suggested six

reasons-for-adoption that were found to be relevant in explaining why management control systems are adopted: 1) Chaos; 2) Learning;   3) Manager background; 4) Need to focus; 5) Legitimize; 6) Contract. Two reasons are mentioned as internal reactive reasons: 1) Chaos: Simons (1995) identifies response to a crisis or problem as a ''trigger'' of adoption. Davila et al. (2009) also found this factor to be an reason for adopting MCS. 2) Learning: MCS may be adopted to formalize an informal routine and capture the learning associated with the routine. This category includes the adopted system emerged as an outcome of a learning process and "*to code existing practice*" (Davila et al., 2009, p.338), or also known as "*learning by doing*" (Davila et al., 2010), as managers may sense that it is more efficient this way. The coding of existing practices, could either be triggered by events, or more often, "*the formalization grew out of the periodic enactment of an informal routine*" (Davila et al., 2009, p.338). These systems can also be updated over time, to include new insights or learning. Also, coding a process allows the practice to go beyond geographic boarders, without the reallocation of people (Davila et al., 2010). Davila et al. (2009) mentioned explicitly that they focus on the adoption of MCS "*rather than the evolution of existing MCS*" (Davila et al., 2009, p. 323). Furthermore, the authors only briefly mentioned that "*A consistent comment from managers we interviewed was the increase in sophistication of their MCS over time*" (p.343).

Davila et al. (2009) also drew upon numerous authors to summarize seven roles that MCS can fulfill, i.e. their purpose in organizations:

1. Make goals explicit and stable.
2. Code learning from past.
3. Help coordination.
4. Plan the sequence of steps.
5. Promote accountability and facilitate control
6. Contract with external parties
7. Symbols to legitimize.

Davila et al.(2009) explicitly distinguish roles from reasons-for- adoption, as some reasons for adoption are not necessarily associated with an MCS role. An MCS can be adopted to fulfill various roles or because an event requires these systems to fulfill a specific role. Moreover, they mentioned that management control systems should be flexible to uncertainty, but also "*stable to frame cognitive models, patterns of communication, actions*" (p.327).

Based on the research mentioned above, we argue that the list presented by Davila and Foster 2007) as well as the research regarding adoption of management control systems in startup companies are

rather comprehensive. However, research how MCS changed, after being adopted in startups remains limited, in the context of startup companies.

2.2 The concept of organizational learning

In the following section, we will present an overview of the organizational learning theories as well as explain our chosen theoretical perspective and model.

2.2.1 An overview of organizational learning

A plethora of books and journal publications by numerous other scholars have presented their own interpretations of the meaning and significance of the term (Shipton, 2006). Although there is wide acceptance of the notion of organizational learning, no theory or model is widely accepted (Shipton, 2006), making it difficult for future research to build cumulatively upon the many diverse ideas articulated. In an attempt to facilitate comparisons between different schools of thought, Shipton (2006) developed a typology according to two dimensions: the first regards whether organizational learning is approached normatively or in a more explanatory/descriptive manner, the second concerns the level of analysis that scholars have chosen to focus on: *"[…]are authors concerned about organizational-level factors that represent learning, such as routines and standard operating procedures, or do they instead focus on individuals and/or the communities to which they belong"* (Shipton, 2006 p. 236). The different schools of thoughts are grouped into four quadrants, as presented in the figure 1, Shipton (2006, p.248) explains:

> *"the learning organization literature portrayed in quadrant 1 presents an idealized vision of best practice, whereas research reviewed in the other three quadrants is (to varying degrees) more critical and concerned about the processes that may explain whether or not such a vision can be achieved. Both approaches complement one another, in that the first offers the vision and energy required to initiate and sustain change, while the second (any one of the other three quadrants) provides an in-depth analysis of the challenges involved."*
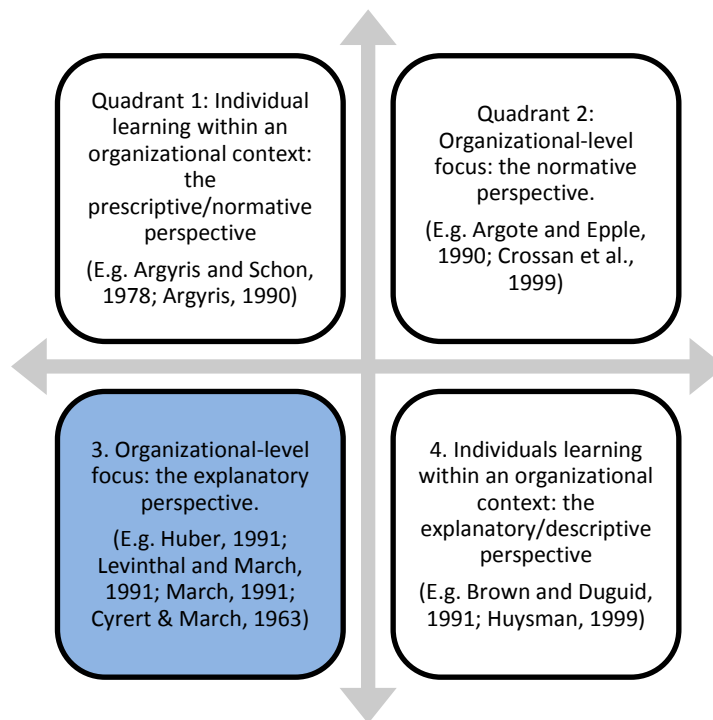
Figure 1 A summary model of the different perspectives on organizational learning (Shipton, 2006, p.237). The chosen perspective for this thesis is quadrant 3, the organizational-level focus: the explanatory perspective.

2.2.2 The chosen persperstive of organizational learning

In this study, we choose to take an organizational focus: explanatory approach as we aim to illustrate the learning process on an organizational level. As a side note, regarding literature about learning in startups, research was more focused on the entrepreneur's learning as an individual learning process (Honig, 2001). As we study the phenomenon from a more organizational perspective, we will focus on theories with an organizational level focus.

Cyert & March (1963) were the first to explicitly bring up the notion of organizational learning from a behavior theory viewpoint (Huysman et al. 1994), as adapting to change became a growing challenge in the ever increasing, fast-paced and uncertain environments in which organizations found themselves. They considered the discrepancy between goals and performance as being the major stimulus for an organization to learn and emphasized on experiential learning or learning by doing. In the coming years, the notion of organizational learning was extended from simple trial and error learning to organizational experience in the form of routines (March & Olsen, 1975; Levinthal & March, 1981; Levitt & March, 1988).

Huber (1991 p. 90) claims that organizational learning exists "*if any of its units acquires knowledge that it recognizes as potentially useful to the organization*" and further states that "*more organizational learning occurs when more if the organization's components obtain this knowledge and recognizes it as potentially useful*", when more varied interpretations are developed and finally

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lead to "*uniform comprehensions*". Huber proposed the four elements of organizational learning: Knowledge acquisition, Information distribution, Information interpretation and organizational memory.

Although Argyris & Schon (1977) is not considered to take an organizational perspective, their definition on organizational learning has been widely cited. Argyris & Schon (1977) define organizational learning as a "process of detecting and correcting error", error being "any feature of knowledge or knowing that inhibits learning" (p.116). Furthermore, Argyris & Schon (1978) explain that in order for organizational learning to occur, learning agents' discoveries, inventions, and evaluations must be embedded in organizational memory: "*They must be encoded in the individual's images and the shared maps of organizational theory-in-use from which individual members will subsequently act. If this encoding does not occur, individuals will have learned but the organization will not have done so*" (Argyris & Schon, 1978, p. 19).

Kloot (1997), is one of early authors studying the linkage between organizational learning and MCS. She built her study upon Huber (1991) and Argyris & Schon (1977; 1978) and various authors's findings. After summarizing the previously mentioned author's definition of organizational learning, she considers that organizational learning is firstly the process of *"detecting problems within the organization and with the organization's fit with the environment, and identifying environmental changes that result in a lack of fit between the organization and the environment*" (Kloot, 1997, p.49). Secondly, "*determines the solutions to problems and how to adapt to environmental changes*" (Kloot, 1997, p.49). She also view the process of learning consisting of the four elements mentioned by Huber (1991). In this study, we will adopt Kloot's definition of organizational learning as we view it describes learning from an organizational perspective and also it combines the view of multiple authors.

2.3 The interaction between Management Control Systems and Organizational Learning

When searching for theories linking management control systems with knowledge and/or organizational learning, results were scarce. A few authors can be cited Ditillo (2004), Turner & Makhija (2006), Bouquin (1999), Simons (1995). We concluded that a descriptive information-processing theory would be most appropriate to use in combination with Davila's & Foster(2007)'s list, as we would then attempt to link the distinct control systems to the stages of knowledge creation and learning.

2.3.1 An overview: organizational learning and management control systems

Illustrating the paradox nature of the organization, Easterby-Smith & Lyles (2011, p.311) describes "*that there was a contradicton between the principles of organization and the principles of learning. Organizing is essentially about creating structures and processes that generate stability and predictability. Learning requires openness to novelty, acceptance of uncertainty*." The topic regarding the interaction between management control systesm and learnins reamins open for debate (Kloot, 1997). Some authors argue for a proactive role of management control systems how it be used to facilitate learning (Lowe, 1971). Other researcher view that management control systems may be an outcome of learning (Den Hertog, 1978). And some argue that management control systems may even impede learning (Argyris, 1990).

The proactive view: Management Control Systems facilitating learning by generating information

Kloot (1997) referring to various authors, suggested that management control systems can be "proactive" when facilitating organizational change. For example, Horngren & Foster (1987) have argued that budgeting systems forces managers to think (p.148), to plan ahead (p.141) and to remove unconscious bias (p.142) and to change human behaviour (p.139). Furthermore, management control systems can also create new ways of interacting with its environment (Dent, 1990; Abernathy & Brownell, 1999) Some authors have been critical towards the positive relation between management control systems and suggest that management control system can also impede learning, depending on how it is used, and that it is not the systems doing the learning, but argue that budget do not do these things, but rather the person who perform these actions, Argyris (1990). As an attempt to bring some clarity, Kloot (1997) and later also Batac and Carassus (2009), studied whether management control systems hinders or stimulates organational learning. Kloot (1997) suggests when using "appriopriate" systems, it enhancing the organization's ability to learn. Simons (1995) suggested that the interactive use of management control systems also faciliates change.

The reactive review: Management Control Systems as an outcome or learning

Referring to Den Hertog (1978), Kloot (1997) mentioned that this author argues that management control systems change in as a "*response to strategic changes in a reactive manner*" (p.54). Den Hertog (1978) suggest that *"redesign of information and control systems is in fact one of the basic conditions for changes towards deverticalization and group autonomy"* (p.41). Furthermore, Den Hertog (1978) mentioned management control systems can be changed in two ways, when adapting to the changing environment: firstly, by aiming at reducing the level of uncertainty by "extension and refinement of the information and control systems" (p.30), in other words, the way to deal with

uncertainty is to know more, faster and better; secondly, on the contrary is to reduce the level of control and information "*by making peripheral parts of the organization more flexible and autonomous*" (p.40).

While various opinions regarding the linkage between management control systems and organizational learning exist. Kloot (1997), in the concluding paragraph of her study mentioned that these two are "*closely integrated*" and "*the relationship between organizational learning and management control systems is both recursive and two way, with the concepts inextricably interwoven*" (p.69). Kloot (1997) further suggest that some management control systems characteristics "*enhance the organization's ability to acquire knowledge, distribute and interpret information, and to increase its memory" (p.70):* Appropriate accounting information, Performance assessment systems, Associated reward systems, Real participative decision-making, Training and development programme, Strategic planning involving many managers and employee, High quality, Development of a common viewpoint. In addition, environmental scanning is used in the organization which demonstrated a high learning capability, as the use of environmental scanning helps the organization to detect its lack of fit with the changing environment.

2.3.2 Batac and Carassus (2009): Linking management control system to learning stages

Batac &Carassus (2009) extended Kloot's theory (1997) by presenting a framework on learning based on three descriptive criteria: learning stages, learning levels and organization levels.
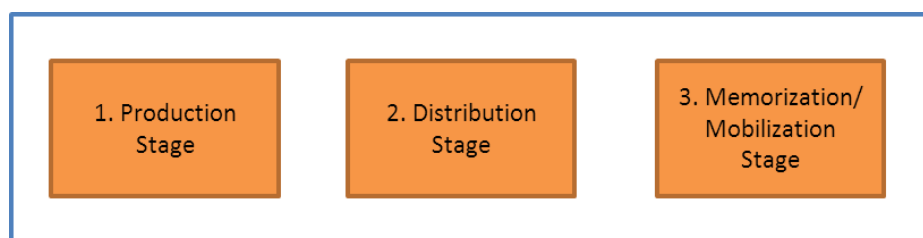
Figure 2 The learning stages suggested by Batac and Carassus (2009, p.206)

The learning stages consists of a (1) production stage, where knowledge is intentionally produced; (2) a distribution stage where learning is shared in the organization; and (3) an organizational memory/mobilization stage, where action is taken to preserve the knowledge produced. As Batac & Carassus (2009) present an explanatory and descriptive framework concretely depicting the phases of an organization's learning process and crosscheck these stages with control systems, we find it appropriate to use in our analysis. For the purpose of this thesis, we will build on the learning stages

of Batac & Carassus (2009)'s framework with contributions from other authors, thereby synthetizing different authors' schools of thought into one model.

The knowledge production stage

Batac and Carassus (2009) assign the following definition to the knowledge production stage: "*This stage occurs when knowledge is intentionally produced, for example when a report is written, a set of indicators constructed, meetings held or other organizations visited with a view to doing benchmarking*" (p.107).

Huber (1991) adopts a broader definition than Batac & Carassus (2009) and talks about knowledge acquisition, the process by which knowledge is obtained. Similar to Batac & Carassus (2009), knowledge can be acquired through systematic processes consciously engaged in by organizational members, but it can also be an unintentional by-product of other processes. This knowledge may be (1) newly created by organizational members through research, experimentation, or experiential learning or (2) acquired from external sources through scanning and searching.

Information and interpretation as knowledge sub-constructs

Knowledge, being a multiform concept (Aggarwal, 2008) has receive attention from various authors to identify the taxonomy. In an attempt to address, what in knowledge, Gao et al. (2008) commented in their study that various authors make a distinction between knowledge and information and consider "*knowledge that builds on information extracted from data*" (Gao et al., 2008, p. 4); also referring to Nonaka & Takeuchi (1995): ''*a dynamic human process of justifying personal belief toward the truth at the organizational level*" (p.4). Other authors, Kogut & Zander (1992) claim that knowledge is both information and know-how: information is defined as knowing "*what something means and includes "facts, axiomatic propositions, and symbols*", and know-how is knowing how to do something. Similarly, Aggarwal (2008) suggest that knowledge can also be defined as including "*a) cognitive categories ; b) codes of interpretation of the information itself ; c) tacit skills, and d) search and problem-solving heuristics irreducible to well-defined algorithms* " (p.162).

Various suggest that interpretaion as the gap between information and knowledge. Gao et al. (2003) suggest that "*Data and information are not called knowledge, but they can be converted into knowledge after being properly interpreted. They are the foundation and materials of knowledge, so are viewed as the subsystems of organizational knowledge*" (p.14). Similarly, Huber(1991) also states that information needs to be interpreted in various ways and a uniformed comprehension needs to be developed for organizational learning to occur. Drucker (1993) and Nonaka and Takeuchi (1995)

take a more action-oriented perspective: knowledge is information that changes something or somebody either by becoming grounds for action.

The knowledge creation and conversion model presented by Nonaka (1994), illustrates how knowledge is created through the four knowledge conversion processes: Socialization, Externalization, Combination and Internalization. Socialization, is the sharing of tacit knowledge[12] between individuals. *Externalization*, is the tacit knowledge translating into explicit knowledge[13], for example through languages, models etc. *Combination* is the conversion of explicit knowledge into more complex sets of explicit knowledge. In practical terms, three processes occurs within combination: 1) Integrating new explicit knowledge through gathering externalized knowledge; 2) Distribution of explicit knowledge by using presentation or meetings 3) Editing or processing of explicit knowledge in order to make it more user-friendly, for example various forms of documentation (plans, reports, market data etc.). *Internalization* describes the conversion of explicit knowledge into the organization's tacit knowledge. Learning by doing, training and exercises facilitate this process and allows the individual to access the organizational knowledge. Internationalization relies on 2 dimensions: 1) Explicit knowledge has to be embedded in the organization's action or practice, e.g. realizing concepts, strategy, or improvements. 2) Embodying the explicit knowledge through experiments that triggers learning by doing practices. Lastly, the knowledge creation follows a spiraling process of interactions among these four stages.

In practice, we recognize the difficulty in identifying the moments of interpretation, as it is very abstract and intangible. Furthermore, we exclude this study from identifying tacit knowledge as the knowledge generated by MCS is more of explicit character. The moment of interpretation are assumed to take place during discussions. This is explained in the section below, 2.3.1.2.

The Knowledge Distribution stage

Batac & Carassus (2009) considers distribution of knowledge to take place, "*if individual learning is shared among all employees in the organization.* " (p.107). It requires one individual/group to share his/her/their knowledge with another group/individual, i.e. collective learning. Turner & Makhija (2006) similarly explain that once new knowledge is acquired, it needs to be disseminated to other parts of the organization (e.g., individuals, groups, departments, or divisions) that require or

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[12] Tacit knowledge is defined as" knowledge tied to the senses, movement skills, physical experiences, intuition, or implicit rules of thumb, is tacit" (Nonaka,1994, p.1182)
[13] Explicit knowledge is defined as "knowledge that can be uttered, formulated in sentences, captured in drawings and writing, is explicit" (Nonaka,1994, p.1182)

otherwise may benefit from it. Without this, incoming knowledge is likely to have minimal impact on the organization.

Nonaka & Konno (1998) introduced the concept of "Ba", the shared space as an "*existential place where participants share contexts and create new meanings*" (p.34). It can be physical (e.g. office, dispersed business space), virtual (e.g. email, teleconference), mental (e.g. shared experience, ideas, ideals). Knowledge is acquired through one's own experience or reflections on the experiences of others. If knowledge is separated from ba, it turns into information. Hislop (2013) also support that view that Ba is an important element for knowledge conversion as it provides enabling conditions, by facilitating interpersonal interactions between people. The concept of Ba consistent of: originating ba, the use of team-based work practices enhances socialization, interacting Ba which facilitates group-based communication; "Interacting Ba", a shared space which provides the platform for knowledge creation. Nonaka & Konno (1998) mentioned that meetings help disseminate and transfer knowledge, either through physical face-to-face meetings or virtual meetings; Cyber ba, a virtual space within which explicit knowledge can be combined, such as within IT systems, online networks, group-ware, documentations, database; and Exercising Ba is described to enhance the effect to absorb and internalize explicit knowledge, be an environment that allows people to familiarize themselves with and experiment with explicit knowledge. An appropriate ba is necessary to support knowledge creation, knowledge creation is typically fragile social process in which people articulate and justify their knowledge to others in a group-based context. On the other hand, inappropriate ba, may inhibit people's efforts to communicate and interact and the leaders' role is to set in place appropriate Ba in the organization.

Hislop (2013)also supports the view that information communication tools, has the purpose to facilitate communication and knowledge sharing. It involves among other the technologies of web 2.0, such as "*web-based platforms, forums and conduits such as e-mail, instant messaging, discussion boards, intranets, chat rooms, blogs etc.*" (p.210). While some systems high in information richness, allows both production and distribution, for example physical or virtual meetings, emails are low in information richness and are suitable to use when the knowledge is codified. He also share similar view that information communication technologies can be used to codify knowledge. While some systems high in information richness, allows both production and distribution, for example physical or virtual meetings, emails are low in information richness and are suitable to use when the knowledge is codified (Hislop, 2013). Similarly, Newell et al. (2009) makes a distinction between knowledge management systems (KMS), for example databases, intranet and emails; and enterprise system, for example, standardized work routines. Both systems focus on codifying knowledge in

order to make them more transferable between individuals an units. Furthermore, Malone (2002) mentioned that knowledge networks, for example Internet, are channels where knowledge could be communicated. Also, companies routinely maintain intranet, i.e. internal networks as well as databases or repositories to facilitate the communication within the company.

Knowledge enablement is a term used to describe what enables or hinders knowledge transferring (von Krogh, et al. 2000). Drawing upon various authors, Jonsson (2012) further suggest three perspectives related to knowledge enablement: cognitive factor, i.e. explicit and tacit knowledge; organizational context; and institutional factors, which emphasis on the motivation of transferring knowledge so that one could better understand what enables or hinders knowledge transferring (Kalling & Styhre, 2003). It is not enough that an organization has the structure in place, also it needs to have a culture that motivates individuals in the organization to transfer knowledge (Hislop, 2009; Jonsson, 2012). Newell, et al. (2009)suggest that motivation is important, and instead of setting up monetary goals, one could use non-financial incentives to stimulate the motivation of individuals. A common reason that hinders knowledge transferring is that the strategy or the view of knowledge transferring is not coherent with the organizations overall strategy and culture (Savary, 1999). Newell et al. (2009, p. 155) further mentioned that the difficulty of implementing an IT system to enable knowledge sharing is the lack of willingness to share knowledge among the employees, as knowledge is a source for personal power in an organization. Leistner (2010, p.94) has compiled a list of the ten[14] most common barriers for knowledge transferring, where lack of time and lack of understanding about knowledge management is among the most common reasons.

The Knowledge memory/mobilization stage

In this phase, the organization has performed activities to preserve the knowledge produced during the production stage. This includes mobilizing previous learning and implementing activities that proved to be effective (Batac & Carassus, 2009).

Memorization: Routine-based and Computer-based

This stage is comparable to the organization memory stage suggested by Huber (1991), representing the means by which knowledge is stored for future use. Argyris and Schon (1978) further suggest that

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[14] 1. Lack of time, 2. Lack of understanding about knowledge management, 3. Lack of understanding about the possessed knowledge, 4. "Knowledge is power", 5. Lack of incentive systems, 6. No transparency, 7, Specialization, 8. Insufficient IT-structure, 9. No organized knowledge transferring, 10. Inadequate organizational culture (Leistner, 2010, p.94)

in order for organizational learning to occur, learning agents' discoveries, inventions, and evaluations must be embedded in organizational memory.

Furthermore, Levitt & March (1988) suggest that knowledge can be recorded in their procedures, norms, rules and written documentation and accumulate such knowledge over time through their members. Furthermore, they suggest that learning can be "routine-based, history-dependent and target-oriented" and "*organizations are seen as learning by encoding inferences from history into routines that guide behavior*" (p.319). Simultaneously, individuals in an organization incorporate organizational beliefs and routines. (Huysman, Sven, & Heng, 1994). Organizations learn by encoding inferences from previous experiences into routines that guide future behavior. The term routine includes forms, rules, procedures, conventions, strategies and technologies around which organizations are constructed and through which they operate as well as the structure of beliefs, frameworks, paradigms, codes, culture, and so on. Learning by experience is mutual, between the organization and the individuals in it (March, 1991).

Huber (1991) foresaw the increased importance of digital technology and computer-based organizational memory. Indeed today, the majority documentation that is shared, takes a digital form whether it be a powerpoint, excel-sheet, word document, pdf file, website and so on. This is in-line with Levitt & March (1988) who suggest that knowledge can be recorded in documents, accounts, files etc. Huysman, Sven and Heng, (1994) also support the view that the organization stores its knowledge in written documentation. Newell et al. (2000) suggest that databases, intranet and emails and enterprise system are also a component of knowledge management systems.

Bringing these examples to a higher abstraction level, we believe that knowledge storage can be routine-based, encompassing, standard procedures, norms, rules, and computer-based memory, encompassing written forms of documentation such as emails, dropbox, google docs and so on.

Mobilization: A revised action plan to correct the gap

In the early model proposed by Huber (1991), the last step of the process of organizational learning is organizational memory, where knowledge is stored for future use. Batac & Carassus (2009) extended the definition of this stage into by adding "mobilization" and suggest that this stage occurs if the organization "*has implemented mechanisms for preserving the knowledge produced*" (Batac and Carassus, 2009, p.107). Batac and Carassus (2009) further mentioned that this stage includes mobilizing previous learning and implementing activities that were proved to be effective (Batac & Carassus, 2009). Memorization and mobilization is viewed by Batac & Carassus (2009) as taking place simultaneously, as the revised information is considered to be stored in the organizational memory

at the same time. Other authors have also provided the supporting view of including mobilization. Argyris and Schon (1978) also mentioned that in order to confirm that a process of organizational learning has taken place, practices are changed after an error has been detected by the organization. Thus supporting the extension of the memorization stage into also including mobilization. Kloot (1997), after compiling various authors definition, considers organizational learning to be *"detecting problems"* and "*determines the solutions to problems*" (Kloot, 1997, p.49). The second part of Kloot's (1997) is comparable to the mobilization step. Furthermore, Argyris and Schon (1978) also supports the existence of the mobilization step as a revised action need to take place in order to confirm the organizational learning. Batac and Carassus (2009) further argue that there are two type of changes in the systems: "*change in the methods implemented to achieve objectives and change in the way the objectives themselves are defined*" (p.105).

2.3.3 Synthesis

In summary, we have presented various literatures linking management control systems to organizational learning. Furthermore, we have presented Batac and Carassus (2009)'s model of organizational learning, which was built on the work of Kloot (1997). We now proceed to present a synthesized definition of the three stages:

Production Stage: *When information is interpreted into something useful for the organization* (Huber 1991 p.90)*, then we consider the knowledge to be produced. The useful knowledge is often a complex form of knowledge stemming from interpreting various types of information (Gao, et al., 2003; 2008; Huber, 1991; Nonaka, 1994), allowing the organization to detect an error within the organization or with its environment (Kloot, 1997; Huber, 1991). By error we do not necessarily mean a negative insight, but rather any sort of deviation between current performance and desired target*.

Distribution Stage: *The distribution of knowledge can occur when information is being distributed and interpreted in a shared space between multiple individuals or groups (Nonaka and Konno, 1998). Also, it can also occur when communicating the produced knowledge into other parts of the organization (Batac and Carassus, 2009; Turner & Makhija, 2006), through various channels (Hislop, 2013; Newell et al., 2009; Malone, 2002).*

Memorization/Mobilization Stage: *When the organization, based on the knowledge generated, finds a solution to "correct the gap" (Kloot, 1997; Argyris and Schon, 1978) and codify this revised plan into its computer-based memory (Huber, 1991;* Huysman, et al., (1994; Newell et. al., 2009) *or routine-*

*based memory[15] (*Levitt & March, 1988)*, when the knowledge is being memorized/mobilized. Lastly, we consider, organizational have occurred when all three stages are fulfille (Argyris and Schon, 1978)*

In summary, Figure 3. illustrates the defined purposes of this study, where we wish to clarify the "what" roles and the "how" process between management control systems and organizational learning; and in the how process describing more in details how MCS are relate to the stages of learning.
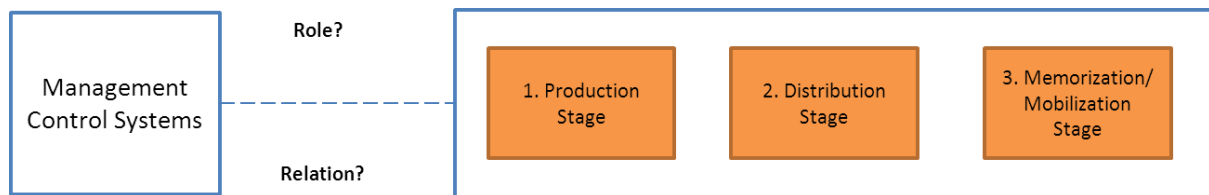
Figure 3 The link of management control systems and organizational learning and the questions the authors aim to further investigate.

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[15] Although, we believe that there are routines "invisibly" embedded in the organization (Levitt & March, 1988). We exclude this study from exploring these routines, for example when a learning outcome takes as a tacit learning (Nonaka, 1994).

3. Methodology

In the following section, we shall firstly present an overview of the chosen methodology; secondly, we shall explain in detail about our research design; thirdly, we shall explain the process of data collection, documentation as well as data analysis. Lastly, we will discuss the quality aspects of our study.

3.1. An overview of the study design

In this study, we choose to apply a qualitative research methodology with an abductive approach.

Qualitative research methods are commonly used to go more in-depth into a topic, with an emphasis on identifying concepts and ideas (Ghauri & Gronhaug, 2005). In qualitative research methods, data are typically more explorative and unstructured. Ghauri & Gronhaug (2005) suggest that qualitative research is particularly relevant when the aim is to discover, gain insights and to contribute to the construction of explainations or theory, and when "*prior insights about the phenomen under scrutiny are modest*" (Ghauri & Gronhaug, 2005, p.202). Consequently, the qualitative methodology was chosen because the evolution of management control systems in startup companies and its linkage with organizational learning is a rather unexplored research area, thus we find studying the topic in-depth and qualitatively to be an appropriate start before one should aim for statistical representativeness. Furthermore, we adopt an explorative approach, in order to construct explanatory theories, as such approach is useful to discover "new relationships, patterns, themes, ideas etc." (Hair et al., 2007, p.154).

The inductive and the deductive approaches are the two most commonly used theoretical approaches (Bryman & Bell, 2011). The deductive approach is used, when the researcher aims to deduce a hypothesis based on what is known about a particular domain and test whether the collected empirical data are consistent with earlier hypotheses or theories (Bryman & Bell, 2011; Thomas, 2006). On the other hand, the inductive approach is used when the researcher aims to derive concepts or themes after collecting, interpreting and analyzing data (Bryman & Bell, 2011). Furthermore, the abductive approach combines the "best of two worlds" of the inductive and the deductive approach and allows the researcher to move between these two approaches "*while practicing the constant comparative method*" (Suddaby, 2006, p.639). For the purpose of our study, we deem the abductive method as the most appropriate choice, as an existing theory is being tested (Batac and Carassus, 2009's model of learning stages), while exploring explore and seeking possible contributions to extend existing theory by analyzing the collected data using the induction approach (The role of MCS).

3.2 Research design

The goal of this study is to build theory and various authors have suggested that building theory from cases are often regarded as interesting (Bartunek et al., 2006; Eisenhardt & Graebner, 2007). Case studies are defined as a study about a specific field, for example a person, an institution or a social group (Merriam, 1994). and are suitable when attempting to seek answers to the *how* and *why* questions (Yin, 2003). Building theory using one or more cases allows the researcher to "*create theoretical constructs, propositions and/or midrange theory from case-based, empirical evidence*" (Eisenhardt & Graebner, 2007, p.25). Case studies are rich as they can be based on a variety of data sources, including observations, archival data etc. (Eisenhardt & Graebner, 2007) and they are "one of the best of the bridges from rich qualitative evidence to mainstream deductive research" (p.25): a case study tends to develop constructs and theoretical propositions that allows "*inductive theory building from cases producing new theory from data and deductive theory testing completing the cycle by using data to test theory the cycle by using data to test theory*" (p.25).

Furthermore, the study of our design, aiming to identify changes in the organization have adopted a longitudinal approach, as (Hair et al., 2007) suggest that this approach is suitable when the research question are influenced by how something vary over time. Using this approach, we follow the same companies over a 10-months time and gather data several points in time.

3.2.1 Case design

Multiple case studies are chosen in our study, as they are more suitable to use when the researcher aims to build theory: they tend to provide more solid and more generalizable theories, as they are based on more varied empirical evidence (Eisenhardt, 1989; 2007; Yin, 1994). Also, it allows the researcher to know whether a finding is a consistent pattern through all cases or a specific characteristic of only one case (Eisenhardt, 1991). The number of cases in a multiple case study varies and the recommended number of cases is between four and 10, in order to reach "theoretical saturation" (Eisenhardt K. , 1989). Furthermore, Eisenhardt (1989) suggests that if the study has less than four cases, it may be difficult to build theory with much complexity. On the other hand, if it is more than 10 cases, then the complexity and volume of data will make it difficult for the researchers to interpret and analyze.

3.2.2 Selection of Cases

The case selection has followed the concept of "theoretical sampling", where the cases are chosen based on theoretical reasons rather than the uniqueness of a specific case (Eisenhardt, 1989; Yin, 1994). Also, it is important to reach theoretical saturation, which is when adding additional cases will benefit the study marginally considering the practical constrains (Eisenhardt & Graebner, 2007).

Firstly, we will discuss the theoretical base of our pool of candidates. Secondly, we will discuss how our sample of four "polar type" companies" (Eisenhardt, 1989), can be argued to reach theoretical saturation.

3.2.1.1 Narrowing the research field and pool of candidates

Firstly, as explained in the introduction the IT industry was chosen based on its dynamic nature and relevance; we consider IT companies to offer software development products or e-commerce services[16]. Moreover, from a practical point of view, there is an increasingly broad network of IT companies in the Stockholm, Sweden, which provides easier access to observe employees in their working environment and face-to-face meetings. By Startup we mean a newly established company, up to 10 years old (Davila & Foster 2005), with "growth potential, innovative and technological focus" (OECD, 2013, p.7).

Secondly, Davila & Foster (2007) point out venture capital funding as a factor influencing the speed of adoption of management control systems, hence our chosen sample all have external investors, increasing the likelihood of finding more management control systems present. The presence of existing management control systems is important as we wish to observe how they evolve over time.

Thirdly, Davila & Foster (2007)'s list of Management Control systems are tested on companies with 50-150 employees at the sampling date, based on the argument that firms smaller in size would mostly be managed through informal controls. Though we by no means refute the possibility of dominant informal controls, we believe that formal management control systems can also be relevant for firms smaller in size in the context of organizational learning, since well implemented controls can both increase scalability of as well as foster a culture of learning within a company. Also, looking at Davila & Foster(2007)'s graph in appendix 2, which represents the correlation between their sample of venture capital-backed companies and management control system adoption intensity, we can see that the majority of the curves are most steep in the 10-30 employees interval. Therefore, the companies chosen for our sample have between 8 and 35 employees, in order to test and possibly extend Davila & Foster (2007) studies.

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[16] The Information Technology Association of America of information technology defines IT as "*the study, design, development, application, implementation, support or management of computer-based information systems*".

In summary, amongst startups we further narrowed our pool of candidate cases to startups which are within the IT industry and based in Stockholm, are backed by external investors, and have fewer than 50 employees.

3.2.2.2 Generating variety for theoretical saturation

In order to generate theoretical saturation, Eisenhardt (1989) suggests that the chosen companies should fill a theoretical gap, cases should include "polar types", where researchers study "extreme, (e.g., very high and very low performing) cases" (Eisenhardt & Graebner, 2007, p.27). Merriam (1994), referring to LeCompte & Goetz (1984), mentioned that it is about establishing a norm of what the typical case should be and then search for cases that reflect the extreme cases, in order for the researcher to learn more about the chosen phenomenon (Merriam S. B., 1994) and to easier identify contrasting themes or patterns in the data (Eisenhardt & Graebner, 2007). Therefore, within the above frame, we seek to study companies as diverse as possible within the narrow pool of candidates (see section 3.2.2.1), based on life cycle phase (age, number of employees), size and business offering, in order to extend theory to a broad range of IT startups and enhance the generalizability of the chosen frameworks/models:

- **Life cycle phase**: Miller & Friesen (1984) suggest five stages of the corporate life cycle: birth-stage, growth-stage, maturity-stage, revival-stage and the last stage of declination. We consider the first two stages to be relevant for the scope of startups companies. We further make the distinction between birth and growth-stage companies to provide more nuance to our data sample. During the birth-stage the firm is young and small, dominated by the owner-manager, has a niche strategy and typically has 3-20 fulltime employees (Shirokova, 2009). The growth-stage is characterized by a medium-sized company and typically has a 20-100 employees (Shirokova, 2009); it is also older, has multiple shareholders and in the phase of broadening its product-market scope into closely related areas. Our sample comprises both birth-stage and growth-stage (see section 3.2.3), bordering maturity IT startups as they are different in size and are at different stages in their product offering.

- **Size**: Our sample respectively has eight, 14, 20 and 35 full-time employees, which can also have implications regarding our findings

- **Business offering**: our sample includes both IT product and IT services companies (see section 3.2.3), which consequently have different business strategies and competitive advantages: the former relying on scalability, and the latter on tailored solutions to their customers.

All the above mentioned factors provide us with a more varied sample, which would allow us to theoretically generalize most robust patterns (Eisenhardt, 1989) or deviances amongst IT startups.

After having conducted preliminary interviews with seven IT startups, we decided to keep four of these, named Company A, B, C and D (see section 3.2.3). We believed this sample was enough to provide a theoretical saturation and contribution since they were nuanced enough to represent the variety of existing IT startups. Having four cases provides sufficient, as Eisenhardt & Graebner (2007, p.27) commented *"adding three cases to a single-case study is modest in terms of number, but offers four times the analytic power"*. Among the companies that were disregarded in this study, two were too small in size (two employees) and too early in their life-cycle phase to have implemented enough systems and to explore the link between control and learning. The third company which was disregarded was similar in terms of product, age and size to Company B, one of the companies already chosen for our sample. Therefore we concluded that it would not provide additional insights for our study.

3.2.3 Presentation of the selected cases

Following our selection criteria, we have chosen the four companies for our multiple case study, which are presented in figure 4 below, followed by a short presentation of each company.

IT Company	A	B	C	D
External Investors	Yes	Yes	Yes	Yes
Founding year	2011	2010	2008	2005
Number of employees	8	14	20	35
Product/Service	Product	Product	Service	Service
Time to revenue	In the process of launching	Selling since 2 years	Selling since 3 years	Selling since 7 years
Life cycle stage	Birth Stage	Birth Stage	Growth Stage	Growth Stage

Figure 4 A summary of the companies included in this study.

3.2.3.1 Presentation of Company A

Company A was founded in 2011 by three students who met during their engineering studies at Linköping University (Lindkvist, 2012). They had all previously worked as IT consultants and came up with the business idea to simplify the platform for web development which allows users to perform their activities easily and smoothly, without worrying about the underlying technical processes. In other words company A's product is a user-friendly back-office intelligence system[17] which allows the developer is able to focus 100% on writing codes rather than first having to create the infrastructure of the hosting platform.

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[17] In practical terms, this means that CompanyA not only supports the regular file transferring protocol "sftp", but also "git" and "svn" systems used to revision and source control the codes (Lindkvist, 2012). This allows the users to publish all codes directly to the company's platform, instead of sending the codes through "ftp".

The company's mission is to be the best option to easily publish, host and scale web applications and websites (Videla, 2012), which is currently a very niche market. Though it received external funding in June 2012 (Videla, 2012) as well as a lot of interest from developers, from the Silicon Valley among others, it has very recently launched its product. Therefore it is still in its birth stage.

In 2013, the company increased in size in comparison to 2012, from 6 to 9 employees, and started to launch their products .

3.2.3.2 Presentation of Company B

Company B offers organizations' the possibility to e-sign with their customers, eliminating the need for physical paperwork and improving their process flow. It has 15 000 users, 400 monthly active users and 130 paying companies from eight countries. The company has two founders, a student from the Stockholm School of Economics and the other with an academic background from Cracow University of Technology. Its workforce is geographically spread out. Since its foundation the company has raised 11.5 million SEK in five rounds from 23 angel investors. 75% of the company is owned by the starting team, and 25% is owned by external investors.

Its business strategy focuses on getting its distribution channels to become viral, by getting large corporations to e-sign large numbers of documents with business counterparts, and simultaneously getting the counterparts interested in the product as well. Since the company is operating in a niche market, has not yet reached virality, we consider it to be in its birth-stage. In 2013, the company increased in size, from 12 to 14 employees in comparison to the previous year. Although the company has an office in Stockholm, the employees of the company are geographically dispersed to large extend. Therefore, the employees use digital means in order to communicate with one another.

3.2.3.3 Presentation of Company C

Company C started out as a as a competition listing service in 2010 and is specialized in "organizing and marketing global, regional or local competitions for connecting the global supply of talents with local demand." It holds a large community of talents where people showcase their skills and compete in case challenges developed by international companies and universities. Apart from connecting students with opportunities, the company also provides organizations with competition-related services to achieve desired goals – in employer branding and challenge-driven recruitment.

The company was founded by two students from the Royal Institute of Technology and two students from the Stockholm School of Economics, with the help of freelance consultants and the "Dragon's den". The company took in an external investor from day one in order to involve someone who has

the relevant competence to start a company. In 2013 the company plans to attract more investors as well as more members on their Board.

Since the company was founded, the team has grown rapidly to 20 employees with an additional twelve hourly or project- paid employees and consultants. It also employs over 700 student ambassadors spread across 60 countries. It currently aims to continue growing their collaboration network with Swedish and international universities, in particular in the USA. Since 2012, the company has also worked in introducing a product in addition to its service offering that is meant to enhance their scalability potential. Hence, the company can be considered to be in its growth stage.

3.2.3.4 Presentation of Company D

Company D is an online marketing agency and offer services that increases efficiency in four areas of online-marketing: search, social, display and TV. Company D is the largest daughter company of Company D Group, with 33 employees (Allabolag, 2012). It was recognized as one of the top 50 fastest growing companies in Sweden during for two consecutive years, 2011 (5667%[18]) and 2012 (985%[19]), (Deloitte, Sweden Technology Fast 50, 2012) Company D was founded in 2005, by a Stockholm School Economics alumni, and as it grew the organization was re-structured into three companies. In this thesis, only the daughter company D is studied.

Company D's major shareholder is an independent venture capital firm focusing on expansion-stage investments in technology and healthcare (Investor Growth Capital, 2013). Other owners of the company are its two co-founders, alongside with the board and a group of external investors (Keybroker, 2012). One of the co-founders has a degree from Stockholm School of Economics and was CEO of the company until 2012, when an external CEO was recruited. The co-founder remains however the CEO of the company's group. With around 35 employees, multiple shareholders and in the process of consolidating its product-market strategy, we consider it to have be in between growth stage and maturity stage.

3.3   Data collection

In this study, we have used interviews as the primary data collection technique (See section 3.3.1). However, other data sources were also considered as observations and documentation (See section 3.3.2). This is consistent with Eisenhardt & Graebner (2007), as they mentioned "theory-building

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[18] Calculated on the basis of compounded growth during five-years-period (2006-2010). Source: Sweden Technology Fast 50, Deloitte, 2011.
[19] Calculated on the basis of compounded growth during five-years-period (2007-2011). Source: Sweden Technology Fast 50, Deloitte, 2012.

cases usually rely extensively on qualitative data from interviews and other sources, such as observations, historical books, archives and so forth". (p.28).

3.3.1   Interviews

We chose to conduct interviews as the primary as efficiency approach to gather rich empirical data (Eisenhardt & Graebner, 2007; Alvesson M. , 2011). Although, interview is a common approach, we are also aware of the potential bias in the data set. Therefore, we followed the approach suggest by Eisenhardt & Graebner (2007) to limit the potential bias and enhance the quality of the data, by selected our participants carefully by including several knowledgeable people with different positions in the company who view the topic from different perspective (See section 3.3.1.2).

3.3.1.1 Interview structure and setting

We conducted two rounds of interviews, the first from September 2012 to January 2013 and the second from September to October 2013, (see figure 5). During the first round, we first conducted preliminary interviews with seven companies, to both identify interesting areas for further research, as well as decide if and which companies are appropriate for our study. After having conducted at least one interview with one person in each company, four companies were kept, as mentioned above (See section 3.2.2) and another interview was conducted with a second person within each company. The first round of interviews consisted of: 1) Gathering background company information; 2 identifying management control systems formalized in each company. After the first round of interview, three companies were excluded (See section 3.2.1). The second round of interviews consisted of: 1) Following up on the list of management control systems with one or two person per company to study whether or not the MCS have evolved at any time since implementation and ask questions to clarify why these changes took place; 2) Gather written documentation on the changes that took place during this time period.

Figure 5 The overview of the interview process and case companies included in the study

The interviews can vary in format, one end of the range is the in-depth and open (unstructured) interviews, the other end is when the interviewer strictly keeps to a pre-defined script (structured) (Fischer, 2010). We in this study adopt a middle road between these two extremes, also known as

the semi-structured interviews (Alvesson, 2011; Fischer, 2010; Merriam, 1994). Both round of interviews were semi-structured, as we followed a pre-defined set of questions in the same sequence for every interviewee (Ghauri & Gronhaug, 2005), regarding background and the systems (see appendix 3). However, we also included unanticipated questions whenever an interesting comment or insight mentioned required more explanation, for example when one system has been changed we follow up more in-depth question to understand "how" and "why". Ghauri and Gronhaug (2005) further mentioned that the qualitative study allows the simultaneous interaction between data collection and analysis, when interpreting data new questions will emerge, which then trigger further data collection.

To prevent individual bias from the thesis authors' perspective, both were present at every interview (Eisenhardt, 1989). All interviews were conducted during face-to-face meetings as this is more optimal approach rather than phone interview or mail interview (Alvesson M. , 2011). The face-to-face meetings took place in the office of the companies respectively. Except for the interviews with the CEO of Scrive with whom we had a face-to-face skype interview, as he was not able to meet us in person. As the interviewees' mother tongue was Swedish, we held the interviews in Swedish, in order to enhance the interviewees' ability to express their thoughts and to avoid non-conformity between the interviewees' thoughts and their expressed words (Alvesson M. , 2011).

3.3.1.2 Participants

Two or three participants with different positions were interviewed in each company in order to increase quality and representativeness (Alvesson M. , 2011). The quality aspect highlights the importance of selecting a person who is especially relevant as informers, also known as "*knowledgeable informants*" (Eisenhardt & Graebner, 2007, p.28), due to their experience, knowledge, openness etc. (Alvesson, 2011, p.61). Thus, we have selected at least one C-level manager (CEO, COO etc.), who also is the founder of the company, as they have experience and knowledge about the company since its founding as well as the overview of the systems, strategic and operational aspects of the business. The representativeness highlights the width and the variation in order to gain a more comprehensive picture and to prevent individual bias from the interviewee's perspective. Therefore, we choose to include a person with an operational role (Business developer/Sales team lead etc). Also, during the first of the interview-round, we always interview two different people in order to compare results and prevent individual biases. During the second round of interviews we also conducted two interviews within each company. However, these were not always with the same persons as in the first round. The reason behind this was lack of availability from the interviewee's part. However, in order to keep some level of consistency, at least

one of the subjects interviewed during round one was also interviewed during round two. For the list of participants, see figure 6.

Company	Interviewee	Interview date	Interview length
Company A	CEO	2012-11-22	60min
	Software Developer	2012-11-15	60min
	CEO	2013-10-08	70min
	CPO	2013-10-11	30min
Company B	CEO	2012-11-15	60min
	CEO	2013-09-02	30min
	CEO	2013-10-12	60min
	Sales team lead	2012-11-21	60min
Company C	Business Developer	2012-12-13	60min
	COO	2013-01-28	60min
	Business Developer	2013-09-02	30min
	COO	2013-10-09	70min
Company D	CEO	2012-12-04	70min
	COO	2012-11-15	70min
	COO	2013-09-02	40 min
	Business Area Director	2013-10-09	70min

Figure 6 A summary list of participants in the four case companies, where four interviews were conducted per company and 16 interviews were completed in total.

3.3.1.3 Interview template

The interview protocols during the first-round interviews consisted of two main parts. The first part was about gathering general data about the company. During the second part we went through a list of management control systems suggested by Davila & Foster (2007). Templates of interview questions can be found in Appendix 3.

The general questions were guided partly by some interview Davila et. al., (2009) also included in their data collection gathering. The general question aim to provide the researchers with an overview regarding the company's overall strategy and structure. During the second part, we ask more specific questions regarding the systems used. We presented the list of MCS to the interviewees, in order to make it easier for them to follow. The list of MCS that we presented to our interviewees was mainly taken from Davila & Foster (2007), which was a compilation of systems retrieved from numerous sources (Baron 1999; Horngren, et. al., 2006), and considered to be main MCS implemented in startups. We complemented the list with a couple of control systems presented by Simons (1995), which we thought might be relevant and were but not considered in Davila & Foster's previous research. For each system we asked the interviewee to describe whether it was formalized within the company, and how/ with what tools these were performed or put in practice. The following explanations of the terms were given to them "*Formalized is defined as having documented a process*

and/or periodically and purposefully executing the process" (Davila & Foster, 2007, p.915). We aim to understand how they are use and therefore asked how systems are carried out with regard to specific tools used, forums where it is discussed, purpose etc. Furthermore, as Davila (2000) mentioned these systems can be updated frequently. We also included questions to ask about their frequency.

During the second round of interviews, we start the interview by first asking the interviewes to tell us the specific the event of some significant changes that occur that have been related to MCS. We further follow up with questions such as "why did this happen?" or "what was the outcome of the situation?". This approach resembles partly the critical incident approach (Fischer, 2010), which enables us to go beyond the surface and gain more in-depth understanding about the various aspects of an organization. Secondly, we ask about the specific changes related to MCS, by asking if they new systems has been formalized, existing systems changed, or removed.

The approach of first asking question in order to gain the overall picture of the company and then focus more specifically on management control systems is consistent with the data collection method used by Batac and Carassus (2009). Furthermore, in both interviews, as we know this list may not be comprehensive, we also ask the interviewee to provide us with information about systems they use that may not be captured in the existing list.

3.3.2 Other data sources

For the purpose of triangulation, several methods of data collection were also adopted, see Table X. We tried to gather data directly from the company, regarding their internal documents, for example conference paper or meeting protocols.   We also collected external data regarding the case companies. Furthermore, we asked to observe the working environment as well the social interaction at the office. When speaking about the digital tools used within the company, we asked to interviewee to demonstrate how they use it to carried out their daily tasks. The advantage of observation, as suggested by Ghauri & Gronhaug (2005), is that researchers can gain "*first-hand information in a natural setting*" (p.121). For the summary list of the observation, internal documents and external data, see figure 7.

	Observations and other sources of data collected
Company A	• Observation of the company-wide events (2012-09-15) • Observation of the working environment (2012-11-15) • Collecting news articles about the company (2013-10-09)
Company B	• Observation of the management system "Trello" (2013-09-02) • Collecting meetings and conference protocols (2013-09-02) • Collecting the organizational chart (2013-10-12)
Company C	• Observation of the working environment (2012-11-15) • Observation of the relocated office (2013-01-28) • Observation of the social interaction at the office (2013-01-28) • Collecting news articles about the company (2013-10-09)
Company D	• Observation of the working environment (2012-11-15) • Observation of the internal chat tool "yammer" (2012-12-04) • Observation of the social interaction at the office (2013-01-28) • Collecting news articles about the company (2013-10-09)

Figure 7 an overview of the observations and other sources of data collected per company.

3.4 Data documentation and coding

3.4.1 Data documentation

The interviews were recorded using our computers, which enabled digital storage. In order to not miss important details, notes were also taken during the interviews. After each interview, we immediately transcribed the interviews by listening to the recorded tape, such suggested by Ghauri & Gronhaug (2005). After the transcription, the documents were then translated into English in order for us to have the raw data in the same language as the final publication. The transcribed data were also sent back to the interviewees via email, in order to receive their confirmation that we have understood everything they meant to express.

3.4.2 Data interpretation – the coding process of the empirics

3.4.2.1 Revising the management control systems list

Looking at Davila & Foster (2007) 46 individual systems as well as the additional systems taken from Simons, it was at time difficult to interpret the exact meaning of the system by both interviewees and the thesis authors, both in terms of content and formalization requirements. No description of definition of these systems is provided in any of Davila's previous studies upon which we could support or refute our findings. We saw that many systems could be interpreted in several ways when the interview company had a similar and/or strongly related system/process in place that fulfilled the same purpose. Therefore we found that a list of definitions of these systems according to our interpretation is necessary, in order to present a consistent and proper classification of the

existing systems in our sample. As a general rule, most of the terms were interpreted broadly, so as to include the strongly related systems.

Regarding the definition of formal, Davila & Foster (2007) explained that "*Formalized is defined as having documented a process and/or periodically and purposefully executing the process*". (p.915). Nonetheless, there is no clear classification of which management control system should fulfill which criteria, i.e."documented" and "periodically and purposefully executed", and which should fulfill both. Therefore, a classification of the systems according to these criteria is also needed in order to determine whether or not the description provided by the interviewees of one system or process could be classified as formal or non-formal.

Furthermore, some control systems or processes mentioned by the interviewees did not really fit under any of the categories, these were added to the list if they were mentioned by two or more of the interview companies. Hence, we present a revised version of Simons (1995) and Davila & Foster (2007)'s list of main MCS for startups, including a more detailed definition of as well as formalization criterion for each system, which we find more suitable for our interview sample. The revised list of management control systems are being divided into two categories (see appendix 4):

- **Category 1**: Being "documented" is the primary criteria for the system to classified as formalized. It could also be "periodically and purposefully executed", although it is not required. This is due to the nature of the system which needs be to written down in order to be classified as formal, for example, core values, codes of conduct, written job descriptions.
- **Category 2**: Being "Periodically and purposefully executed" is the primary criteria for the following systems to classified as formalized. They could also be "documented", although it is not required. This is due to the nature of the system is often a recurrent process performed by the organization. It can be and is often documented as well, although this is not the predominant factor. This includes for example, cash flow projections, operating budget, routine analysis of financial performance against target and so on.

3.4.2.2 Coding of the adopted systems and evolved systems

The results were based on the answers from all the interviewees and from all the round of interviews. In some instances the interviewees' answers differed from each other, in which case we coded the response that was the most credible and detailed. Sometimes, the interviewees' interpretation of the degree of formalization would be different, but the description of the system would essentially be the same. Regardless, for each company the findings were coded either as "yes"

or a "no" depending on whether the interviewees' descriptions of the system fulfilled the above mentioned definition of each system/ the above mentioned criteria for formalization:

- Yes: If the management control system in question fulfills the criteria of formalization of the category (1 or 2) to which it belongs.
- No: If the Management Control System in question does not fulfill the criteria of formalization of the category (1 or 2) to which it belongs

If changes are mentioned either during the first round or second round of interviews, then the systems will be given the following codes:

- Yes**: If the system was concluded as non-formalized in the first round and then implemented in the second
- Yes*: If the system was concluded as formalized during the both rounds of interviews but had undergone changes in design
- No*: If the system had once been implemented but has, either during the course of or even before the interview period, been removed.

The sample findings of management control systems are summarized in the figure 8. The figure presents the implemented and formalized management control systems in each of the four case companies. In total, 47 systems out of 51 systems, compiled based on the list of 46 systems presented by Davila & Foster (2007) and 3 systems by Simons (1995) and 3 additional systems identified by the thesis author. As the majority of systems are identified to be formalized in one or more of our companies, we consider the list to be relevant for companies with 8 to 35 employees, who are at the early and growth stages of their life cycle.

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Systems and Processes	Company A	Company B	Company C	Company D	Digital Tool
Strategic planning					
Definition of strategic (nonfinancial) milestones	Yes*	Yes	Yes	Yes	Documents (A,B,C,D)
Customer development plan (plan to develop market)	No	Yes	Yes	No	Document (B,C)
Headcount/human capital development plan	No	No	No	No	N/A
Product portfolio plan (plan about future products)	Yes*	Yes	Yes	Yes	Documents (A,B,C,D)
Investment budget	Yes	Yes	Yes	Yes	Excel (A,B,C,D)
Financial planning					
Cash flow projections	Yes*	Yes	Yes**	Yes	Excel (A,B,C,D)
Operating budget	Yes*	Yes	Yes	Yes	Excel (A,B,C,D)
Sales projections	No	Yes*	Yes	Yes	CRM System (Salesforce) (D); Excel (A,B,C); Google-doc (C)
Financial evaluation					
Capital investment approval procedures	Yes	Yes	Yes	Yes	Routines (A,B,C,D); Documents (A,B)
Operating expenses approval procedures	Yes	Yes*	Yes	Yes	Routines (A,B,C,D); Documents (A,B)
Routines analysis of financial performance against target	No	Yes	Yes	Yes	Routines (A, B, C)
Customer acquisition costs	Yes	No	Yes**	No	Excel (A,C)
Customer profitability analysis	No	No	Yes**	Yes	Excel (A,C,D); In-house systems (D)
Product profitability analysis	No	Yes	Yes**	Yes	Excel (A,B,C,D); In-house systems (D);
Human resource planning					
Core values	Yes**	Yes	Yes*	Yes	Employee Handbook (A), Document (B), Website (D)
Mission statement	Yes	Yes	Yes	No	Document (A,B,C)
Organizational chart	Yes	Yes*	Yes*	Yes*	Document (B,C,D); Routines (A)
Codes of conduct	No	No	No	No	N/A
Written job descriptions	No	Yes**	Yes	Yes	Document (B,C,D)
Orientation program for new employees	Yes	Yes	Yes	Yes	Document (B,C,D); Routines (A,D)
Company-wide newsletter	No	Yes*	Yes**	Yes	IEmails (D); Internal chat tool (D); Newsletter (B,C)
Human resource evaluation					
Written performance objectives for managers	No	Yes**	Yes	Yes	Document (B,C,D)
Written Performance evaluation reports	No	No	Yes	No*	Document (C)
Professional development dialogues	Yes	No*	Yes	Yes	Routines (A, C, D)
Linking compensation to performance	No	No	Yes	No*	Routines (C)
Individual incentive programs	No	Yes	Yes	No	Routines (C); Stock Option Program (B)
Product development management					
Project milestones	Yes*	Yes	Yes	Yes	Document (B,C,D)
Product concept testing process	Yes	Yes	Yes	Yes	Routines (A,C,D)
Product development documentation	Yes	Yes	Yes**	No	Document (A,B,C)
Reports comparing actual progress to plan	Yes	Yes	Yes	Yes	Excel (C,D); Planning system "Basecamp" (C)
Project selection process	Yes	Yes	No	No	Routines (A,B)
Product portfolio roadmap	Yes	Yes	Yes	No	Document (A,B,C)
Budget for development projects	No	Yes	Yes	No	Excel (B,C)
Project team composition guidelines	No	No	No	No	N/A
Sales management:					
Sales targets for salespeople	No	Yes**	Yes	Yes	CRM System (Salesforce) (C); Document (B,D);
Market research projects	Yes	No	Yes	Yes	Document (C); Internal Chat Tool (A); Routines (A,D)
Sales force compensation system	No	No	Yes	No*	Routines (C)
Sales force hiring and firing policies	No	No	No	No	N/A
Reports on open sales	Yes	Yes	Yes	Yes	CRM System (A,C,D)
Customer satisfaction feedback	Yes	No	Yes	Yes	Routines (A); Survey (C,D)
Sales process manual	No	Yes	Yes	Yes	Document (B,D); Routines (D)
Routines analysis of sales	No	Yes	Yes	Yes	Routines (B,C,D)
Sales force training program	No	No	Yes	Yes	Meetings (C); Routines (D); Training (D)
Marketing collaboration policies	No	No	No	No	N/A
Customer relationship management system	Yes	Yes*	Yes*	Yes	CRM System (A,B,C,D)
Partnership management					
Partnership development plan	No	Yes	No	No	Document (B)
Policy for partnerships	No	Yes**	No	No	Contract (B)
Partnership milestones	No	Yes	No	No	Document (B)
Partner monitoring systems	No	Yes	No	No	Document (B)
Other Systems (Simons 1995):					
Intelligence systems	Yes	Yes	yes	Yes	CRM System (A); Digital Analytics (B,C,D); Inhouse systems (
Business plans	No*	Yes	Yes*	Yes	Document (B,C,D)
Standard cost accounting systems	Yes	Yes	Yes*	Yes	Accouting agency (A); Accounting system (B,C,D)

Figure 8 An overview of the formalized systems (Yes), the non-existent systems (No) and the systems in the transition stage "In-progress" in all four companies. How the formalized systems in the four companies are executed are shown in the column "Execution". The asterisk marks the system/process that have been changed (Yes*), or added (Yes) or been removed (No*), during and close to the period of study.**

3.4.2.3 Data interpreting the linkage between Management Control Systems and organizational learning

When interpreting the linkage between the management control systems and organizational learning, one approaches were used.

Firstly, we adopted an inductive approach, following the coding procedure suggested by Thomas (2006). approach to classify MCS into different roles stems from an inductive analysis and open coding, where we group management control systems who share similar characteristics in terms of use and purpose in the context of organizational learning, after analyzing the collected data on how companies use MCS systems in their daily operations. This approach is consistent with Thomas (2006), who suggested that the essence of inductive analysis, is to use "*use detailed readings of raw data to derive concepts, themes*" (Thomas, 2006, p.238). Based on careful reading of the empirical data, we coded the systems with regard to their purpose. The codes were then grouped into categories according to the recurrent themes. This open coding process was done firstly by the thesis authors individually, followed by discussion between the two authors. This approach allows us to recognize generate and refine the elements to explain certain topic.

Secondly, based on combining various sources of data, interviews, meeting protocols, observations, we started illustrate the process of organizational learning. The illustration of each case study was interpreted by the thesis authors independently, and then the process was discussed between the two in order to depict the process as accurately as possible. In case of major disagreements, then we also follow-up with the interviewees to asking clarifying question and ask them for confirmation whether we have understood them correctly. When displaying the empirical examples, we face the trade-off between "better stories vs. better theories" (Eisenhardt & Graebner, 2007, p.29), as the challenge in multiple-case studies to stay "spatial constraints while also conveying both the emergent theory […] and the rich empirical evidence that supports the theory". Acknowledging the trade-off and as making an theoretical contribution is the goal, we follow the theory structure and support each part of the theory with examples from some of the cases. The theory-building process occurs by a constant comparison between empirical evidence and the theoretical framework proposed by Batac & Carassus(2009), "*by recognizing patterns of relationships among constructs within and across cases and their underlying logical arguments*". (Eisenhardt & Graebner, 2007, p.25)

Hereby, we summarize the data documentation and analysis process in the following four steps, as presented in this section (see figure 9).
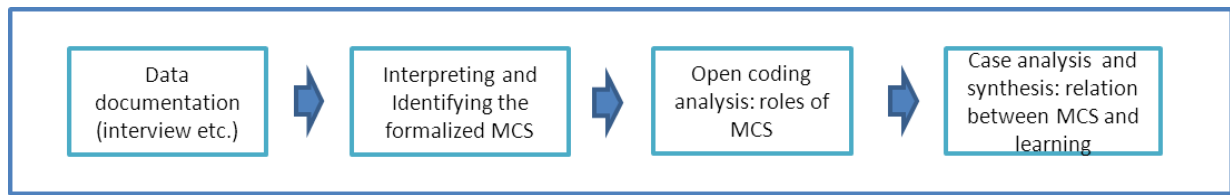
Figure 9 – An overview of the data interpretation and coding process

3.5 Quality aspects

3.5.1. Reliability

Reliability describes the extent to which the process of the study is stable and consistent over time and across researchers (Miles & Huberman, 1994), in other words reliability concerns how well our study can be replicated using the same methods and achieving the same results (LeCompte & Goetz 1982). In the methodology and analysis sections of the report, we have tried to describe our interpretation of theoretical frameworks used as well as explain our process of collecting, coding, and analyzing our data in great detail in order to make our thought processes are as comprehensive as possible, and hence, possible to replicate.

3.5.2 Validity

Internal validity:

Internal validity is the extent to which the findings of the studies make sense and authentically portray reality (Miles & Huberman, 1994). We are aware of the fact that the answers from our interviewees may not reflect an objective reality, as the interviewees' retrospective sense-making (Eisenhardt & Graebner, 2007) can be influenced by their role in the company, among other factors. Therefore, we interviewed at least two different people within the companies. Furthermore, we are aware of the fact that the interviewees may not fully grasp the concepts presented to them. Hence, we reflected critically and challenged the assumptions in empirics (Alvesson & Sköldberg, 1994). For instance, we tried to explain theoretical concepts to interviewees as clearly as possible, also providing the same definitions to all interviewees, and we did not simply take their "yes" and "no" answers for granted, when asking which systems are formalized. Instead, we asked them to elaborate how these were used in practice. Based on their description and our critical reflection the theoretical definitions, we then decide on the formalization degree of the systems.

We have further strived to increase internal validity by recording all interviews and transcribing these in order to double check the accuracy of statements. In addition, we have sent our empirical findings back to the interviewees to confirm and complete gaps in the findings. Furthermore, we have tried to

combat interviewees' subjectivity with complementary data sources, such as internal written reports, website information and so on which was recommended by Yin (2003) as a method of triangulation. However, we acknowledge that "qualitative research assumes that reality is constructed, multidimensional, and everchanging" (Merriam, 1995, p. 54). In line with Merriam (1995), we therefore acknowledge that this study is our interpretation of reality.

A continuous challenge throughout this study has been the difficulty in clearly understanding and defining various terms and definitions that relate to our main theoretical frameworks, such as under what conditions certain systems are considered as formal, or whether all or some of stages the learning process need to be achieved in order for organizational learning to occur. Opinions have varied between researchers and the lack of clarity has also made it difficult to interpret our empirical results. In order to combat these challenges, we have continuously questioned our own interpretations of the data and, as explained above, documented in detail our coding processes of both theory and analysis.

External Validity

External validity concerns the degree of generalizability of the findings from the research (Bryman & Bell, 2007). Our study relies aims to produce analytical generalization, meaning producing findings and hypotheses that are transferable and applicable to situations and persons outside the research (Flick, 2011), and other points in time. We have tried to enhance the external validity of this study by choosing multiple case studies rather than a single one, which vary across a number of characteristics within a certain framework, in order to reach theoretical saturation. As such we believe that a broader understanding of the relationship between management control systems and organizational learning has been achieved, increasing the probability of being able to apply these findings to all IT startups, and possibly even other industries and more mature firms as well, assuming that the majority of the MCS presented are implemented.

3.5.3 Objectivity

According to Miles & Huberman (1994), objectivity is the relative neutrality and freedom from unacknowledged researcher biases. This implies that if different researchers use the same method to the same people, their results should be identical (Flick, 2011).

Objectivity is practically impossible to achieve fully in qualitative research, as researchers are unconsciously influenced by their personal traits, cultural, social, maybe even political backgrounds. On the other hand, Flick (2011) argues that the communication, interaction and the researcher's

subjective interpretations in qualitative research should not necessary be viewed as biases but rather as strengths and preconditions for the qualitative research. Nonetheless, all interviews were conducted in pairs, in order to mitigate individual bias Voss et al. (2002) in the data collection. Moreover, classification and interpretation of answers were in a first stage done individually and then collectively, in order to reduce bias in the data analysis and interpretation.

4. Empirics

In this chapter, we shall present our empirical findings after collecting, documenting and sorting the data discussed in the previous chapter. Hereby, we shall present our findings according to the outline of the research question: firstly, we shall present the findings regarding which Management Control Systems can role in organizational learning; secondly, we shall illustrate how management control systems in the case companies are related to organizational learning and its learning stages.

4.1 The roles of MCS in organizational learning in IT Startups

4.1.1 The proactive role of MCS in stimulating organizational learning

Based on the data collected from all of our interviews, we present in this section all the existing MCS in sub-groups, according to their purposes. Thereafter we classified these sub-groups into what we see as their overall role with regards to knowledge production, distribution and memorization.

4.1.1.1 Guiding MCS

We have labeled the following systems are Guiding MCS as they guide employee behavior.

Setting abstract goals to guide behavior

Core values and mission statement guide employee behavior by defining abstract goals, which influences their work attitudes and decisions. The Developer in Company A (2012) explains "*We are only allowed to work on something that creates value for the customer*". The CEO of Company A (2013) further explained "*if we have clear core values it will act as our moral compass*". In company B, employees ask themselves "*is this in line with our core values?*" (Sales team Lead, Company B 2012) in order to help them make a decision, when in doubt or when discussing features to add to their product. Regarding mission statement/vision, both company A and B have expressed that it unites and inspires employees to work together towards a common dream: "*People are only engaged if they believe in it. You always need a dream vision so that people do not quit*" (CEO, Company B, 2013) ; "*People are complex creatures. If we want the company to grow then our employees need to be united on the same page*" (CEO Company A, 2013).

Setting an overall structure and guidelines for employee behavior/Defining roles and responsibilities

The organizational chart and written job descriptions also guide employees' behavior, by defining roles and responsibilities.

In all companies, the organizational chart is used to set a reporting structure, which helps coordination and clearly defines different positions and roles. For instance, in Company D it clarifies

to employees who should report to whom: the Campaign Analysts, who perform campaigns ads for customers, report to so-called Client Directors, whom in turn report to Business Area Directors. In company B, the reporting structure looks different from the normal hierarchy based on "titles": the CTO reports to the Lead developer for practical reasons and then Lead developer coordinates all the developers and takes care of purchases (CEO, Company B, 2012). Similarly, written job descriptions can be used to promote accountability, as it aims to clarify one's area of responsibility (CPO, Company A; CEO, Company B; Business Area Director, Company D), and what is expected to be delivered (COO, Company C).

Company D also provided examples of when these systems were counterproductive in guiding employee behavior: both the organizational chart and job descriptions have changed several times since founding in Company D; the latest change in both these systems occurred due to bottlenecks in the reporting structure (for eg. the Campaign analysts, short-circuited their direct superiors and reported to people higher up in the hierarchy), as well as inappropriate allocation of job responsibilities (for eg. the Client Directors who were direct superiors to Campaign Analysts had staff responsibilities but not customer responsibilities, and hence did not focus on what Campaign Analysts delivered to the clients).

Setting rules or procedures which the employees should follow

Some systems guide employee behavior by establishing explicit rules and procedures to follow: these are capital and operating expense approval procedures, product development documentation and policy for partnerships. The first two regard how employees are allowed to spend financial resources: the capital approval procedure in Company A sets clear rules, i.e. all purchases above a certain amount need to be approved by all three co-founders (Developer, Company A 2012). In company B, all operating expenses need to be approved by the CFO (Sales team Lead, Company B, 2012). Also, product development documentation process defines how knowledge should be stored and shared: both Company B and C have this process, which entails that all technical aspects of their products need to be documented, in order to retain the knowledge within the company as well as easily enable its transfer between colleagues. This procedure was implemented for the same reason in both companies, as they realized they were losing core knowledge when employees left the company (CEO Company B, 2013; Business Developer Company C, 2013). Policy for partnerships dictate how and who one can become partner with (CEO Company B; 2013).

Motivate employee by rewarding certain behavior/ promoting certain attitudes

Linking compensation to performance, Individual Incentive programs, Sales Force Compensation systems are three control processes which reward certain results, and hence indirectly define a certain expected standards of performance. In company C, financial bonuses are given to employees who achieve outstanding performance (Business Developer, Company B, 2012) and hence motivate employees to achieve their targets and beyond. In company B, there is an option program that enables all employees to purchase shares in the company. With financial capital invested in the company, the employees are then incentivized to maximize the company's overall performance (CEO, Company B, 2012).

Training employees to perform/Develop employees professionally

Sales force training program, Sales process manual and Orientation program for new employees all aim at training the employees and improving their skills. In Company D, several employee functions go in part through the same sales force training program "They [salespeople] go through the same training as the Campaign Analyst to learn about the company's products and services." (Business Area Director, Company D, 2013), allowing employees to be aligned in their knowledge. Furthermore, the sales process manual is named the *sales pipeline methodology and "it specifies how the sales people should report the sales and follow on the sales etc. All sales people use it*." (Business Area Director, Company D, 2013). In company A, the orientation program consists of a kick-off day and an employee handbook to help guide a newly recruited employee (CEO, Company A, 2012).

4.1.1.2 Information MCS
We have labeled the following systems as information MCS as they are used regularly to generate new information.

Planning MCS
The MCS in following categories are all future-oriented and hence we have grouped them under the label "planning MCS".

Setting milestones for the organization on multiple levels

Strategic non-financial milestones, project milestones and partnership milestones are defined in some or all companies within varying time frames, as goals to achieve in the short future: the Business Area Director at Company D (2013) explains "*This industry, [...] is extremely dynamic and changes often. Strategic milestones are [...] never set more than one year in advance, planning further ahead is impossible*". This is true in our other case studies as well, which also plan no more than a year ahead: the CEO of Company A (2012) explained: "*Yes we define these (strategic*

milestones) with the investors. We have technical and market milestones set for the 3 coming months, for the next 6 months, and for the next year." Project milestones are also very dynamic as these are updated very frequently depending on customers' wishes in both company A and B, as both these companies have a work with their product development in weekly or two-week iterations.

Defining a plan for the organization

Customer development plan, product portfolio plan, partnership development plan, product portfolio roadmap and business plans have been grouped together as they share similar purposes of clarifying steps to follow and accomplish. The Customer development plan helps company B to narrow down its market scope and focus on certain customer groups that it find most relevant (CEO, Company B, 2013) and it is a system that is important for Company D as well: "*we work very actively with it*"   (Business Developer, Company C, 2012). The product portfolio plan for Company B is a continuous discussion "*especially as we are almost done with our current product*", management seeks to find the next future opportunity in the market. It is similarly a very dynamic process in company A: "*it changes a lot depending on the customers' wishes. It is discussed with the entire team and with the customers of a weekly basis*" (CEO Company A, 2013).

The product portfolio roadmap has a similar function, but focuses more on product features in companies A, B and C, since they all sell one main product. For the same reason, it is interesting to note is that project milestones is considered by the CEO in Company B (2012) to be equivalent to product portfolio roadmap, (CEO Company B, 2012). Company B is the only amongst our case studies which has a partnership development plan, and it enables the company to distinguish between their three types of partners, and to develop different targeting strategies accordingly: *"we've adjusted it many times, but we have a good plan now"* (CEO Company B, 2012)*.* Product concept testing and Project selection are processes that employees go through when selecting which project/product development feature/ and direction to pursue: "We put post-its' on the wall and divide them into four categories: do now, plan next, ice box – which are for the future, done" (CEO, Company A, 2012). These two systems are used very frequently in all the companies in which they are implemented, as overall the interviewees have mentioned that they use product development management systems on a weekly basis.

Finally business plans are also included in this category but are mostly relevant for the board of external investors in order to demonstrate plans for the future and to attract potential new external investors(Company B; C; D) , and hence not used as frequently.

Defining the financial goals for the organization

Investment budget, Operating budget, Budget for development projects, Cash flow projections and Sales projections have been grouped together because they either set a cost budget, which is to be followed but not crossed, or define expected financial figures to reach. The CEO at Company A (2012) expressed that "*the investment budget is very important and we have a clear plan*" and the Business Area Director at Company D (2013) explained that "*the investments budget is decided on a yearly basis.* In Company C, the Operating budget is set for every quarter and then followed up diligently and the budget for developments projects allow each department or team to plan accordingly (COO, Company C, 2012). Projections of cash flow and sales are set on a shorter term in all companies, though they might be set for 12 months, they are broken down to monthly targets to reach as well, for example "*We have monthly board meetings and we work with a 12-month rolling forecast*" (Sales Team Lead, Company B, 2012).

Setting measurable goals for employees

Professional Development Dialogues and Written performance objectives for managers and employees fit under this label: the case companies A, C and D that have development dialogues use these to focus on future improvement. Written performance objectives define individual goals for employees to achieve, these KPIS differ from role to role: "*We have sales budgets for salespeople, quality targets for production people and so on*" (Business developer, Company C, 2012)

Evaluation MCS

The MCS in the following categories have an overall label "Evaluation", as they all represent some form of monitoring and assessment.

Evaluating performance against pre-set goals

Routine analysis of financial performance against target, Routine analysis of sales, Written performance evaluation reports, Reports comparing actual progress to plan are systems and processes that evaluate actual performance versus a set target: regarding sales "*We discuss what has gone well and what hasn't on a weekly basis. […] We go through sales cases and discuss what has been said and what has gone well and what hasn't.*" (COO, Company C, 2013). This implies that the

information provided by these systems is always benchmarked against a planning system, such as sales targets.

Evaluating performance by calculating KPIs

Customer acquisition costs analysis, Customer profitability analysis and Product profitability analysis are grouped together as they are focused on margins and function as KPIS: the COO at Company C (2013) commented *"We evaluate these on a quarterly or half-year basis. The CFO presents the information needed to discuss this during our "lessons learned" meetings and how we can improve them"*.

Provide overview of the company's overall status

Company-wide newsletters, Standard cost accounting systems have been described as providing an overview of the company's retrospective achievements and current situation. Company B for instance, includes sales performances in the company-wide newsletter (CEO, Company B, 2013) and Company C uses the cost accounting systems to withdraw financial data to be analyzed (COO, Company C, 2012).

Exploration – Capturing external information and identifying opportunities

The systems grouped under this label provide in essence information about future opportunities, either in the form of market research projects, customer satisfaction feedback, customer relationship management system, reports on open sales, intelligence systems, partner monitoring systems. Arguably, many of these systems could also be classified as evaluation systems, such as customer satisfaction feedback; however based on the interviewees' description of this system, though the feedback given is a form of evaluation of the companies' product /services, more importantly the customers' feedback has been a source of inspiration for new opportunities.

4.1.2 The reactive role of MCS: MCS as an outcome of learning

Hereby, we provide examples of how management control systems can be affected as an outcome of organizational learning. For all full overview of the affected systems, see appendix 6.

Formalization of MCS as an outcome of learning

After nearly 10 months since the first round of interviews, several systems had been adopted as an outcome of learning, For instance:

- Written performance objectives and Written job descriptions in Company B, when the teams got restructured due to systematic failure in reaching sales projections: *"We aim to have clear*

performance objectives per team as well as sales targets for the growth and the partner team […] in order to set meaningful goals, I have worked on it together with my mentor for half a year" "[…]*some time last year, we realized that it pays off to document the job descriptions*" (CEO, Company B, 2013).

- Product development documentation in Company C, due to unexpected loss of knowledge: "*We started documenting all product development information, due to earlier crisis that occurs when key employees left the company*" (Business Developer, Company C, 2013).

Modification of MCS as a result of learning

Some systems were changed as a result of learning-by-doing and after a trial-and-error process:

- Company-wide newsletter in Company B: "*We had it once before, but we have changed the format now. After some trial and errors, once a week we sent out a short newsletter and once per month a longer version. Before, the newsletter contained too much storytelling and the respond was that it was difficult to get an overview. Now, we have changed it to including a financial update and some brief comments.*" (CEO, Company B, 2013).
- Organizational chart in companies D, due to its wrong design of responsibilities and reporting structure: "*Before, the responsibilities were overlapping and ambiguous. For example, the campaign analysts received directions from two different persons. This resulted in bottlenecks […] chaos and frustration. We have recently made a significant change the organizational structure. Now, new roles were formed and the responsibilities were reallocated.*" (Business Area Director, Company D, 2013).

Removal of MCS as an outcome of organizational learning

Interestingly, as a result of learning, some systems were even be removed:

- Sales force compensation system in Company D due to wrong design of the system: "*We had it but we removed the bonus program, because it caused the sales team to focus too much on their bonuses and too little attention was devoted to create value for the customers.*" (Business Area Director, Company D, 2013).
- Professional development dialogues was removed in Company B, as the CEO decided to use an informal approach of trusting his instincts: "*I trust my radar […] I can see when people are dissatisfied, [formal] development dialogues are only needed at bigger companies*" (CEO, Company B, 2012).

4.2. How do MCS related to the stages of organizational learning?

In order to depict the relationship between MCS and learning, we asked all interviewees during our follow-ups sessions to 1. recall any organizational changes or learning moments that occurred in the past year, as well as 2. go through the list of management systems once more and talk about any changes or updates. Based on the first question we further asked them describe both the origins of the problems to see if these could be linked to MCS as well as the outcome of the implemented change. Following up on the second question we asked them what cause these changes. Asking from these two perspectives provided us with a lot of data that allowed us to capture both major changes that link several MCS to the production, distribution and memorization stages of learning, as well as capture smaller changes in MCS that were more specifically linked to the memorization stage of learning. In the following section, we have chosen to provide examples of major changes that have occurred in these companies, as we believe they best illustrate how some MCS can proactively stimulate change and learning and how some MCS can reactively be altered as an outcome of the learning and change implemented.

4.2.1 Production of knowledge: interpretation of information

A change involves the detection of some form of deviation between the present situation and what one wants to achieve. As written in the literature review and introduction, organizational change can also be seen as a form of organizational learning. Our case studies have all shown us that knowledge leading to change derives from the detection of deviation between their plans and their current performance, which in turn derives from discussions around and interpretations of various types information generated by MCS.

Indeed, recurrent comments regarding the majority of the Information MCS, contain key expressions such as " we discuss", " we look at deviations", "we go […] through", " we evaluate", " we analyze", "we work with", "[this topic/system/information] is brought up", " [employee] presents a suggestion", "we work in iterations", and across all companies A, B, C and D, indicate that the information provided by Information MCS is not simply collected, but also used as a basis for assessments and for new knowledge to be created.

Guiding MCS, on the other hand, do not seem to be discussed or analyzed as recurrently. However, many of the interviewees have explained that these have more of an overall steering impact on how the employees work, act, as well as what projects, and/or decisions are taken: for instance, the CEO at Company A (2012) explained how their main core value "Flow" "*acts as our moral compass*" and "*we should live and breathe it*".

The following examples illustrate how our case studies have all used various systems to generate new knowledge regarding their performances and status:

Company A: production of knowledge based on new insights about potential market positioning, ways to improve work processes and ways to improve product

Since the first round of interviews, Company A received external funding (Investment budget) which allowed the organization to more on a bigger scales and how to go about fulfilling its Vision/Mission "*to help developers find flow in their work, by eliminating distractions from the development and launch of their own products*" (CEO Company A, 2013) in the longer term. Therefore management decided to postpone the launch of the product in order to assure they were headed in the right track the right way – "*we got a lot of investment money and felt that we could do this for real […] we felt that we could do better than this […] we could be even more clear, even more sharp*". The employees took in a lot of feedback from users as well as from researchers (Product concept testing process, i.e. Information Planning MCS; Customer satisfaction feedback and experts in the field of psychology (Market research projects) in order to better understand what their positioning in the market should be, which helped them determine how they could create flow in all aspects of the company: from optimizing their daily work efficiency to improving their product.

Company B: Production of knowledge based on the detection of a malfunctioning sales strategy and new insights about profitable customers

In Company B, a change in sales strategy was implemented last year. By continuously analyzing their sales figures (Routine analysis of sales) and open leads that rarely progressed to closing deals (Reports on open sales) they realized that they systematically failed to reach their sales projections, which also impacted their overall financial performance and cash flow. In this wider context it was imperative for Company B to figure out how to improve the sales figures: it was "*change strategy or die*" (CEO, Company B, 2013) – Hence, by looking at the market differently (Market research projects) management decided to change customer targets.

Company C: Production of knowledge based on new insights regarding the diversification of the product portfolio

Company C also went through a major strategic change in its business model which started slightly before the first round of interviews and is about to be completed at the time of writing. Management's objective was to become more scalable (Mission Statement; Routine analysis of financial performance against target, more so than what they could achieve with their current business offering. - "*Often for newly started companies, you turn your business model around a couple of times before you find the one that is right*" (COO, Company C, 2013). By scanning their environment (Market Research Projects), they

got inspired by American IT startups that develop products which can be universally sold and in large amounts. They decided to apply the same thinking to their own company and developed an IT product related to their current service offering, which automates certain services and allows customers to conduct certain demands on their own – "*It was both driven by the market and by the customers*" (COO, Company C, 2013).

Company D: Production of knowledge based on the detection of malfunctioning motivational incentives, responsibility allocation, and new insights into reporting structure and job roles

Similar to Company B, Company D experienced issues with its sales, more specifically its profits margins (Sales projections i.e. Information Planning MCS; Routine analysis of Sales i.e. Information Evaluation MCS; - "*The sales people were receiving compensation based solely on revenue. So it happened that the sales people sold a service for 10 000 SEK but that might cost 20 000 SEK to produce. The errors were not immediately detected as the sales increased fast at first*." (Business Area Director, Company D, 2013). In parallel, customers were not receiving the attention they desired from the company (Customer satisfaction Feedback); the level of satisfaction progressively decreased and with it the churn rate (i.e. the number of customers which ended their contracts) increased. At the time, the organization was structured so that three levels of positions were in contact with the client in one way or another: the sales team, client directors and campaign analysts, subordinate to the client directors. The communication between these different positions was very weak, it turned out that "*the sales team promised things to the clients that the campaign analysts could not deliver, and that the client directors were not even aware of […] Basically it happened that we promised things to the customer that did not match the requirements we put on the staff*" (Business Area Director, Company D, 2013). The root problems went back to the bonus systems, where salespeople were simply incentivized to maximize their monthly bonus, rather than bring in profitable customers, in conjunction with the fact that the client directors did not have client responsibility.

4.2.2 Distribution of knowledge

When asked how and in what context their implemented control processes are used, interviewees all recurrently mentioned the word "meetings": "*we discuss these during our Friday management team meetings, we look at deviations.*" (COO, Company C, 2012); "*we make decisions together during meetings* " (CEO, Company A, 2013).

The meeting routines vary slightly from company to company, but a general pattern across the four case studies can be seen, between the type of meeting (company-wide, management team, board) the categories of systems discussed during these meetings. For e.g. Company B has the following meetings routines:

"We have *Company-wide meeting*s on Mondays, where the entire company meets through Skype in order to update everyone on their work progress. We also have *Management team meetings* on Thursdays, where allocate 1/ 4 of the time to discuss about product development, 1/3 about sales, 1/3 about financial planning and the rest of the time about marketing and administrative issues. On a monthly basis, we have *board meetings* where we mainly discuss financial planning and evaluation systems. Also, every three month, we have investor meetings where we discuss the strategic issues. The strategic issues as well as some human resources-related topics are discussed through *annual conferences*." (Sales team lead, Company, 2012)

All the case studies are similar in the for e.g. financial planning and evaluations systems are discussed during board meetings, or that company-wide meetings are usually a recap of all departments' progresses.

Another interesting fact regarding meetings was that some of our case studies have so-called "Lessons learned" specifically aimed at finding improvement areas by analyzing retrospective events (Business Developer, Company C, 2013), and "Buzz" meetings (COO, Company D, 2012), aimed at exploring future opportunities by brainstorming around ideas inspired by some environmental scanning. This emphasizes once again how meetings enable the sharing of ideas and enhances knowledge production. Finally, we also see that face-to-face meetings can be crucial not only for the "physical" distribution of knowledge, also for the mental mindset and unity of the company. This was the case in Company B, the CEO initiated annual conferences to allow all the geographically dispersed employees to meet face-to-face and feel that they were part of one team "*We were all dispersed in different areas and it felt like if we didn't meet soon the company would fade away and die. When we met it turned out to be a very good way to keep us together. Since then we have repeated a physical conference gathering every year*" (CEO, Company B, 2013).

This example displays how several systems are used during one same meeting, indirectly support our findings in section 4.2.1. Production of knowledge. This also means that meetings seem to be the interacting platform where the production of knowledge occurs. Moreover, usually it does not suffice with discussions during one meeting for the implementation of a change and organizational learning to occur. Indeed, we have seen that it is usually the same errors that are recurrently detected during several meetings which lead to the decision of a revised action plan: the sales and customer dissatisfaction issues in Company D resulted from a systematic error in targets and current performance: "*we started to see a pattern and brought it up at the management meetings*" (Business Area Director, Company D, 2013)

As seen in figure , a lot of the systems are documented either in excel, databases, internal chats, and so on, which serve as other forms of knowledge distribution. Some tools are more sophisticated, such as the mentioned Salesforce (Company C and D), a CRM tool which incorporates several systems such as reports on open sales, closed sales, relationship with customers, and Trello (Company B), a digital project management tool: *"We use the enterprise system, Trello, in our daily work where we store all the to-do lists and meeting protocols etc."* (CEO, Company B, 2013). These tools are accessible by all employees, allowing easy coordination and distribution of information and knowledge between them.

4.2.3 Mobilization and Memorization of Knowledge

When knowledge is being mobilized and memorized, the process of organizational learning becomes complete. We have seen in our empirical examples, that the same digital tools used to distribute knowledge, can also be used to memorize knowledge, as they provide a form of documentation that allows all employees to access it. Hence, reports, meeting protocols, documents, project management systems (Basecamp, Trello) and so on, seen in Table 1. help memorize knowledge. For instance, the business developer at Company C (2013) explained how the systematic documentation of their product development processes, allowed the company to retain knowledge within the company, even if key employees left.   The fact this this procedure is now also routinized, is another example of how knowledge can be internalized within the company. Indeed, in company B the operating expenses procedure was simplified: " *Before I had to get all costs approved by the CFO and Board. But it often happened that I had to close a deal without having time to ask for approval. So now, I have a certain budget I can spend without needing approval*" (CEO, Company B, 2013). As this new procedure became a routine, the learning in this case can also be considered as memorized.

 In order to portray the full process of organizational learning, we follow-up on the examples provided in the section 4.2.1 Production of knowledge, in order to explain how the new knowledge produced led to the implementation of several changes.

Company A: the new action plan led to strategic changes, improved internal work processes as well as implemented, altered and removed control systems.

After having revised their strategy, the company changed name in order to better represent the essence of their business and improved their internal work procedures. In addition, they refined their core values, and the interest from developers and constant feedback from customers impacted the project priorities as well as the direction in which they continue to develop their product as well as which

features to add/ develop: "*We have changed the our priorities of the different projects and the project milestones of for example R&D and back-end programming.*" (CEO, Company A, 2013).

Company B: the new action plan meant a change in sales strategy, which led to changes in several systems.

By deciding to focus on a new segment of potential customers, Company B not only changed its distribution strategy but also its sales team structure as well as their sales & marketing strategy: the sales team which was originally selling direct, was reduced in number and divided into two teams (organizational chart, i.e. Guiding MCS), one working towards attracting large potential customers, the other towards dealing with SMEs that are interested in buying their product. Selling direct as a sales strategy was dropped and more focus was put on increasing word of mouth. In addition, new sales projections were also set at a more realistic level, sales targets (Information Planning MCS) per team were introduced for the first time to have more clear goals to work towards. (CEO, Company B, 2013)

Company C: the new action plan led to strategic changes in business model and changes in several systems

To achieve its vision of scalability, Company C widened its product portfolio to include both services and a product offering. By doing so, the organization also needed to adapt its sales strategy, team composition and job roles: new responsibilities were added to job profiles (written job descriptions) and teams were re-organized (organizational chart) so that certain employees would be more focused on continuing with the current service offering and others on product development. In conjunction with this plan, they are also currently in the process of changing their company name, to one that better suits their business offerings. (COO, Company C, 2013)

Company D: the new action plan led to several human resource system changes and removals

With customers dissatisfied and employees working to their own benefit, management decided to remove the compensation system and restructured the organization, re-allocating responsibilities between different roles so as to better coordinate tasks between employees and provide better service to the clients: "*Before, the responsibilities were overlapping and ambiguous. For example, the campaign analysts received directions for two different persons. This resulted in bottlenecks […] chaos and frustration. We have recently made a significant change the organizational structure. Now, new roles are formed and the responsibilities are reallocated*." (Business Area Director, Company D).

5. Analysis

In this chapter, following the outline of the two research questions. Firstly, we will shall analyze the role of management control systems in the context of organizational learning in IT startups. Secondly, we shall analyze depict the how management control systems relate to the learning stages in IT startups in an attempt to depict the process of learning.

5.1 The roles of MCS in Organizational Learning in IT Startups

Hereby, we shall first analyze which the role of which MCS can proactively stimulate learning and then how MCS can reflect organizational learning in a reactive manner.

5.1.1 The proactive role of MCS in stimulating organizational learning

As presented in the literature review, existing literature has depicted seven roles that MCS can fulfill, either simultaneously or specifically. Since our study looks at MCS and their relationship to organizational learning, we do not find the presented role classification suitable and some of these roles, such as "symbols to legitimize" are difficult to link to learning. Rather than looking at general roles in terms of why they exist (Davila et al. 2009), we seek to depict the role they fulfill when stimulating the process of learning. Although various related concepts have been brought up in an attempt to explain the roles of MCS in the context of learning, for example Kloot (1997) illustrated the characteristics of management control systems and how they relate to features of organizational learning. We do not find the clear answer in these theories, thus, using it as a guidelines, we will search for the probable answers in an exploratory approach.

Simons (1995) defines management control systems as formal and information-based routines and procedures. Following this definition, all MCS provides information for the organization. Though we do not contradict this statement, our empirical evidence shows that, in the context of learning, some MCS systematically generate *new* information, and some are more used to guide employee behavior. Therefore we suggest a classification of MCS with the following labels: Information MCS and Guiding MCS. .

5.1.1.1 Guiding MCS

In order to determine which MCS are considered as "guiding", we have coded their purposes based on their appellations and empirical data. The classification of Guiding MCS can be found in appendix 5. Empirical examples and related theoretical concepts supporting this categorization are presented below.

This category emerged as these systems all have in common that they are used to guide employee behavior. March (1991) mentioned that routines can help the organization to guide future behavior.

Horngren & Foster (1987) also suggested that systems can be used to influence how managers think and to alter human behavior, thus confirming that MCS can impact behavior. see appendix 5. Hence, we argue that, although existing in various forms, Guiding MCS' primary purpose is to *serve as a reference frame for the company's culture, communication and action patterns guide employees in their behavior. This is turn, impacts what and how employees respond to change and learn, as will be described more in detail in section 5.2.2.* Second*, since they serve as a reference frame and they are not primarily used to generate new information on a regular basis*.

As explained in the empirics, core values and mission statement guide employee behavior by defining abstract goals, which influences their attitudes and the tasks performed. This becomes clear for example in company B, where employees base their decisions according to whether they are in line with their core values or not (Sales team Lead, Company B, 2012). This resembles Simons' (1994; 1995) classification of belief systems, which is defined as to "*define, communicate, and reinforce the basic values, purpose, and direction for the organization*" (Simons, 1994, p.170). One of company A's core values is to only work on something that creates customer value (Business Developer, Company A, 2012), suggesting that their values steer and limit the production, distribution and memorization of knowledge towards constantly creating customer value. The mission statement also steers the company's direction and serves as an important driver of intrinsic motivation, as both company A and B clearly expressed that their mission statement unites and engages the organizations' employees.

The organizational chart and written job descriptions also guide employees' behavior, by setting the overall structure and guidelines for employees. This is comparable to the two roles suggested by Davila et al., (2009), i.e. helping coordination within the organization and promoting accountabilities for the individuals. In all companies, the organizational chart is used to set a reporting structure, therefore helping coordination. For instance, in Company D the organizational chart depicts the company's hierarchy and how Campaign Analysts report to Client Director, whom in turn report to Business Area Directors. For instance, in Company B it sets the structure where the CTO reports to the Lead developer for practical reasons and then Lead developer coordinates all the developers and takes care of purchases (CEO, Company B, 2012). Similarly, the written job descriptions can be used to promote accountability, as it aims to clarify one's responsibility area (CPO, Company A; CEO, Company B; Business Area Director, Company D), and what is expected to be delivered (COO, Company C). The structure put in place can also facilitate or hinder the knowledge distribution and memorization. In Company D, bottlenecks occurred due to an inadequate reporting structure.

Some systems guide employee behavior by establishing rules and procedures to follow explicitly. This also helps the organization to store memorize and record its practices (Levitt & march, 1988). These systems are also known as boundary systems, suggested by Simons (1995). For instance, the capital approval procedure in Company A is a clearly defined process, i.e. all purchases above a certain amount need to be approved by all three co-founders. The purpose of guiding through standard operating procedures is considered to enhance efficiency, as it frees up management attention to only guide by exception (Davila,2005). Also, having rules and procedures in place to specify how employees should store the produced knowledge is important. Company B and C mentioned that it was when key employees left the knowledge that they realized the importance of having a product documentation process, enabling the transferring of knowledge in the organizations by allowing colleagues to access this knowledge. The rules and standards, are argued by Levitt & March (1988) to "encoding inferences from history into routines that guide behavior" (p.319).

Systems that reward certain behaviors and not others, are arguably also considered as guiding MCS. As seen in our empirical data, some companies choose to share the profit with employees that achieved outstanding performance (Business Developer, Company B, 2012), and some companies attempt to create option program that enables all employees to purchase shares in the company (CEO, Company B, 2012) etc. Similarly, Otley (p. 365, 1999) emphasizes on the importance of rewards and incentives. Similarly, Jonsson (2012) argue that it is not enough to only have structure in place but the motivation from employees is also very important. Thus we argue that rewards could guide employee behavior, by stimulate the motivation.

The training programs within one company serve the purpose to provide a platform to guide employees to achieve a better performance in their daily work. In Company D, for example, all new employees participate in a training program to learn about the company's services and products (Business Area Director, Company D, 2013). Kloot (1997) mentioned that one of the characteristics of management control systems that enhances the organization's ability to learn, is the training and development programs, as they are essential to "*support participation and empowerment*" (Kloot, 1997, p.70). Nonaka (1994) further mentioned meetings help organization to internalize knowledge.

Lastly, Guiding MCS are formal systems embedded in the collective memory of all employees, either as a routine procedure or through documentation. Although Guiding MCS can also be redefined or changed once they are set in place.

Sub-conclusion: *Management Control Systems can stimulate organizational learning by guiding employee behavior, by reinforcing basic values, setting a direction, providing a structure, establishing*

rules and rewards and a platform for training for employees, which enhance the person's ability to produce, share and internalize knowledge.

5.1.1.2 Information MCS

By analyzing how management control systems are used and their characteristics, we have categorized some systems under the label Information MCS according to two criteria: Firstly, this type of management control systems *primary purpose is to provides information used to facilitate the detection of errors to discover either the lack of fit internally or the organizations lack of fit with its environment* (Kloot, 1997).

Secondly, it *generates new information as it is being updated in content, either on a periodic or regular basis*. The purpose to produce information has been noted by various authors. Davila (2000) suggested that certain systems "*fulfills an information role to facilitate learning and experimentation*" (p.386). The information it provides are explicit (Nonaka, 1994), which could be distributed to other parts. Davila (2000) further suggest that management control systems in new product development, a context characterized by uncertainty, is viewed as to produce information to close the "information gap", which is the information needed for a certain task and the information already in possession (p.387). Also, he mentioned that MCS systems can be used to generate new information, or updated, with varying frequency.

Using an open coding analysis (Thomas, 2006), we have further classified Information MCS into three categories, according to the type of information they produce that is, as can be seen in appendix 5.

Information Planning MCS

The first group, Information Planning MCS, consists of MCS that we coded as: Setting milestones for the organization on multiple levels, Defining a plan for the organization on multiple levels, Defining the financial goals for the organization on multiple levels, Setting measurable goals for employees. This is consistent with Horngren & Foster(1987) who mentioned that control systems can be used to plan ahead. These systems aim to provide information about the planning, estimations and goals for the organization. The information produced by these MCS is typically more forward-looking, and MCS named "plan", "projections", "roadmap", "milestones" among other have been put under this category. Though varying in frequency whether they are strategic or operational, the information generated is continuously updated[20]: for instance, as written in the empirics, project milestones are

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[20] The frequency of updates varies depending on the system with the following emerging trend: Project milestones (weekly), Sales targets (monthly), Product portfolio plan (quarterly), Customer development plan and investment budget (yearly).

set almost weekly in companies B and C, because they work in iterative processes. Setting an objective and plan has argued to be one or the primary purpose of Management Control Systems (Merchant, 1985; Otley, 1999; Davila et al., 2009). Kloot (1997) further emphasizes that contingency planning involving many managers and employees at all levels, instead of strategic planning involving few senior managers, enhances the organization's ability to learn. Interesting to note is that these systems, though future-oriented, are in our sample set on a short-term basis, never more than a year ahead. This could be due to the dynamic nature of the IT industry, as the Business Area Director of company D (2013)explained.

Information Evaluation MCS

The second group consists of MCS that we coded as: Evaluating the performance against pre-set goals, Evaluating performing by calculating KPIs, Define the routine for evaluation, Provide overview of the performance; which are used to monitor and evaluate the company's performance against the plans and goals. These systems have been shown to provide a basis for discussion and sources of improvement, such as when Company C routinely analyzes its sales figures and discusses what has gone well, wrong and what could be improved. This category is similar to the concept of diagnostic control system, suggested by Simons (1995), a formal feedback system used to monitor outcomes, to evaluate the progress with its preset objectives and to take corrective measure if deviations occur. Systems containing keywords such as "evaluation", "analysis", "comparing" have been categorized into this group. Other systems were not as evidently labelled as evaluation MCS, however based on the empirical evidence we were able to deduce their primary purpose, as illustrated by the quotes appendix 5.

Information Exploration MCS

The third group has been coded as Capturing external information and identifying new opportunities, as it includes management control systems that gather information about or from the external environment. However, it may also serve the purpose to evaluate or to plan. These MCS help detect other deviations in the form of unexploited opportunities and can therefore can also be similar to Simons'(1995) categorization of interactive systems, which analyze strategic uncertainties and explore opportunities. For the organization to learning, it should detect both error within the organization as well as errors between the organizations fit and the environment (Kloot, 1997). Huber (1991) also argue that knowledge can be acquired from external scanning and searching. Further, Kloot (1997) has also argued that external environmental scanning is an activity of

importance to enhance the organization's ability to detect its lack of fit with the environmental, thus facilitate learning. Furthermore, she argue that one of the MCS characteristics assume to have a positive relation to learning is to collect external information regarding its competitors, customers as well as analyze and distribute the information about external stakeholders.

Sub-conclusion: *Management Control Systems can stimulate learning by producing information. Furthermore, we have identified three type of information, planning, evaluation and exploration.*

5.1.2 The reactive role of MCS: as an outcome of organizational learning

Kloot (1997) referred to various authors when suggesting that management control systems change "*in response to strategic changes in a reactive manner*" (p.54). The authors demonstrated that a learning organization may change its systems to accommodate to environmental changes. Based on our longitudinal study, we aim to depict in the following section that Management control systems can be altered in several ways as an outcome of organizational learning.

Formalization of MCS as an outcome of learning

Our empirical data showed that MCS can be formalized as a result of organizational learning, either reacting to an event that triggered the adoption or through incremental learning. This resembles the internal reactive reasons-for-adoption suggested by Davila et al., (2009): *chaos* and *learning-by-doing*. Some systems were found to be adopted as a reaction to the sudden chaos event, for example a crisis originated in the employees failure to reach the projected sales (Sales team lead, Company B, 2012), or an unexpected event that led to loss of knowledge triggered the adoption of product development documentation in Company C (Business Developer, Company C, 2013). MCS are also argued to become formalized, as managers may sense that it is more efficient this way, i.e. learning-by-doing (Davila et al., 2010). For example, the CEO in Company B eventually realized that documenting job responsibilities and roles, i.e. Written job descriptions, was a viable way to allocate and clarify tasks.

Modification of MCS as a result of learning

We have found in our empirical evidence that systems can change as a result of learning-by-doing and after a trial-and-error process, described as "*flexibly adjusting project activities and target to new information, as it becomes available*" (Sommer & Loch, 2004, p.1335).This was evident in Company B, in the case of company-wide newsletter, the system were adjusted multiple times according to the employees' feedback, in order to find the right design where it provides useful information. This is inline with Den Hertog (1978) who suggest that systems can be extended and

refined , aiming at reducing level of uncertainty, when adapting to an changing environment. A major change that occurred in companies B, C, and D is the change in organizational charts, that were all due to changes in strategy: this linkage has been highlighted by, among others, Sandino (2007). Furthermore, this type of change occurred when the company have detected an error with the system's design, for example in the case of the changed organizational chart in Company D.

Removal of MCS as an outcome of organizational learning

Interestingly, as a result of learning, some systems can even be removed. The systems removed are either because of wrong design of the system, for example sales force compensation systems in Company D, or that the managers do not perceive them as useful for the organization and cause too much administrative burden, for example business plans in Company A. These can be seen as cases where inappropriate systems do not assist in learning (Kloot, 1997), and is also consistent with Davila et. al., (2009) who referring to Cardinal et al., (2004) explained that some systems may be formalized and removed throughout a life cycle as the organization re-engineering themselves. Greiner (1972) further suggests that some systems are kept informal as the managers do not have the knowledge to implement these in the right way. In Company B, the formal professional development dialogues took a backward approach as they were formalized, and then removed. Instead the CEO decided to use an informal approach of trusting his "radar" and instincts to detect when people are not happy "*I trust my radar […] I can see when people are dissatisfied, [formal] development dialogues are only needed at bigger companies*" (CEO, Company B, 2012). This action can be supported by Davila et al., (2009) who believe that some informal management "*are not necessarily bad and may even outperform formal systems*". (Davila et al., 2009, p.341). This is in-line with Den Hertog (1978), who suggest that another approach of changing a system in respond to change is to reduce the level of control and information "*by making peripheral parts of the organization more flexible and autonomous*" (p.40).

Sub-conclusion: *Management Control Systems can be adapted to organizational changes either by being formalized, changed, or removed.*

5.2 How do MCS relate to the stages of organizational learning?

In the following section, we aim to provide the analysis of the process of how the information produced from various management control systems relate to organizational learning, building on the findings from the previous chapter. The process of organizational learning, suggested by Batac & Carassus (2009) are described to consist of three stages: production of knowledge, distribution of knowledge and memorization/mobilization of knowledge. Here, we aim to describe how MCS relate to each of the stages above mentioned.

5.2.1 Production of knowledge: Interpretation of information

Following Huber's definition of knowledge, we consider knowledge is produced when information is being interpreted by the organizations' members into something useful for the organization (Huber 1991 p.90). Hereby, we illustrate how information are interpreted into knowledge by discussed two aspects, the combination of information and the setting of where knowledge is produced. The first aspect stems from the observation that when the information is being distributed, after being produced by different management control systems respectively[21], the members of the organization will be able to combine different sources of information and interpret it into something useful for the organization. The second aspect is the setting or the forum of where people interact with one another to enable the act of production of knowledge. This will be discussed in section 5.2.2 Distribution of knowledge, as the setting where knowledge is produced, also often serves as a platform for distribution of knowledge[22].

The useful knowledge produced for the organization has also been explained as detecting an error (Argyris, 1977; Argyris 1990; Kloot, 1997; Batac & Carassus, 2009). As explained in the literature review section, errors can be attributed to *"problems within the organization and with the organization's fit with the environment, and identifying environmental changes that result in a lack of fit between the organization and the environment"* (Kloot, 1997, p.49). Hence, in the following empirical examples, we demonstrate how the interpretation of various types of information is carried out as well as exemplify how knowledge (errors and solutions) is generated.

The knowledge its lack of fit between the organization and the external environment were generated by interpretation information from external stakeholders in Company A:

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[21] In the analysis above (See section 5.1), we have suggested the two roles of Management control systems in the context of organizational learning, to guide employee behavior (Guiding MCS) and to generate new information (Information MCS). Furthermore, three sub-categorized emerged when classifying the information according to its purpose, resulting in: information planning MCS, information evaluation MCS and information exploration MCS.

[22] The production of distribution knowledge is a intertwined process. For simplicity reasons, we have chosen to discuss the combination of information which convert into knowledge in production of knowledge (5.2.1), followed by the setting of where knowledge is produced and distributed in the distribution of knowledge (5.2.2).

The managers in Company described that they acknowledge the need to revise its go-to-market strategy, which was triggered by an substantial investment budget. By combining information derived from conducting market research on their environment (Exploration), as well as testing product concepts with customers/users (Evaluation), they received extensive feedback (Exploration) regarding improvement areas.

The systematic use of various MCS generated information regarding the lack of fit between Company B's strategy and its environment

When systematically analyzing the sales figures (Evaluation) and its financial performance (Evaluation), against the sales projections (Planning), management detected recurrent deviations between their performance objectives and their results. Based on the information provided by these control processes, as well as Customer relationship management systems (Exploration), they were able to evaluate their current and potential relationships with customers and concluded that their current target segment would not help them reach their objectives. With this new knowledge, they performed some market research (Exploration) regarding others ways to approach their customer market differently, and were eventually able to decide on a new and more effective strategy.

The systematic use of various MCS generated information, helped detect an internal lack of fit between Company Cs the business offering and the vision:

By looking their financial performance against target (Evaluation)and their vision/mission statement (Guiding), company C, Company C conducted market research projects (Exploration) and product concept testing (Evaluation) together with customers, in an attempt to become more scalable. These systems provided the information needed to brainstorm around new ideas.

The systematic use of various MCS generated information, helped detect an internal lack of fit between Company D's overall performance objectives and other MCS:

The managers at Company D commented that errors were the routine analysis of the company's financial performance against targets (Evaluation), Sales projections (Planning) and routine analysis of sales (Evaluation). The results showed over a longer period of time that their financial performance was not in line with the desired customer profitability (Evaluation). Together with the information provided by Customer satisfaction feedback (Exploration/evaluation), three problems rooted in three Guiding MCS were identified: the bonus incentive system the job responsibilities as well as reporting structure of the organizational chart were wrongly designed

Based on the examples above, we can often see that an Information Evaluation MCS has an Information planning MCS counterpart which, together, allow for the detection of error to occur between objectives/targets and actual performance. For example, operating budget serves as a planning information, then the Routine analysis of financial performance against target evaluate the company's performance against the pre-defined operating budget. This is consistent with Batac & Carassus (2009), who suggest that knowledge is produced through the constant interaction between

objectives, methods and results. They also suggested that the use of some control systems jointly produced knowledge, although this was not earlier studied in-depth.

The knowledge creating process described above are also comparable to the concept of externalization[23] and combination suggested by Nonaka and Konno (1998). Combination, describes the process of combining different types of explicit knowledge to create more "complex and interrelated systems of knowledge" (Hislop, 2013, p.111). In the context of organizational learning, we consider that the process of creating more complex form of knowledge is a suitable comparison for the knowledge useful for the organization (Huber, 1991), for example by detecting an error (Kloot, 1997; Argyris, 1990). Therefore, we conclude that it does indeed require several MCS to produce knowledge. Although no clear pattern has been found, there is a tendency that knowledge always seems to derive from the combined use of guiding, planning, evaluation and/or exploration MCS and not from the combined use of, for instance, solely planning MCS.

Indeed, an organization needs to have a culture that motivates individuals in the organization to produce and transfer knowledge (Hislop, 2009; Jonsson, 2012), as the CEO in Company A (2013) stated "*Motivation is key behind everything*". Otley (1999) argues that if the MCS are not providing the right motivational incentives and framework, it might result in employees behaving in a way that is counterproductive to the organization's strategy. This was evident in company D where the sales force compensation system created too strong monetary incentives, and consequently had negative effects on the company's profitability and relationship with its customers. This is in line with Newell et al. (2009), who argued that instead of setting up monetary goals, it is important to set up incentives that stimulate engagement among individuals. Thus, we argue that guiding MCS also plays a role in the production of knowledge. However, we believe that although not explicitly stated in some of the examples, Guiding MCS always generally impact knowledge creation and decisions made in the companies by motivating and setting a structure that guide employee behavior. We believe the guiding MCS influences the production of knowledge indirectly, by guiding how employees should go about to produce information and interpret it into useful knowledge.

Sub- conclusion: *When information is interpreted into something useful for the organization then we consider the knowledge to be produced. The useful knowledge is often a complex form of knowledge stemming from interpreting various types of information. All of the above examples demonstrate*

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[23] Externalization is when one individual articulates the knowledge explicitly, while communicating to others. However, as we wish to study the knowledge on the organizational level, only looking at the individual knowledge creation process may not be sufficient. Therefore, we choose to exclude it from studying it in-depth in our study and assume that externalization has occurred before combination of explicit knowledge takes place.

situations where various types of MCS have produced information, which, when used and analyzed together led to the detection of deviations and the identification new opportunities. Also, influenced by MCS that guide employee behavior that stimulates motivation. Then, new knowledge was generated which could in turn initiate a change.

5.2.2 Distribution of knowledge

Various communication channels exist within a company to spread knowledge that has been produced. On the one hand both information and knowledge can be spread through written form, such as protocols, reports, databases accessible to all employees, and on the other through-face-to-face interactions, in the form of for e.g. meetings (Nonaka & Konno, 1998; Batac & Carassus, 2009).

Regarding the latter form of communication, meetings (virtual or physical), we have seen that that all companies have a several types of meetings (company-wide, management, board meetings) where different control systems are used and information combined together. For example, both planning information systems and evaluation information systems regarding different functional areas (financial planning, sales, product development) are discussed during the management team meeting in Company B.

Hence, meetings can serve as a platform for knowledge sharing, but also for knowledge production: during meetings the team members "*discuss*", "*go through*", "*discover […] fix*", "*evaluate*" various MCS. This is consistent with Nonaka & Konno (1998), whom name meetings as one of the key "Ba", a shared space which provides the platform for both knowledge creation as well as distribution: meetings help disseminate and transfer knowledge directly. More specifically, meetings can be seen as the "Interacting Ba" type, which facilitates group-based communication, and provides high information richness (Hislop 2013). Meetings can further enhance knowledge production and sharing by making it is primary purpose, as understood by the so-called "lessons learned" and "buzz" meetings in companies C and D. Furthermore, the meetings have also been found to strengthen employee motivation in Company B, a finding supported by Jonsson (2012).

Moreover, though it is true to say change and organizational learning stems from the production and distribution of new knowledge, it can be argued that it is more relevant to say that learning stems from the recurrent distribution of the "same" knowledge or findings: as was witnessed in Company D, it was the recurrent detection of sales deviations and the recurrent dissatisfied feedback from customers which occurred during the course of several meetings which led management to act and implement a solution. The same goes for the other cases studied. Though this argument is not explicitly mentioned by Batac & Carassus (2009) as well as Kloot (1997), it can be read" between the

lines", as the learning occurring in their case studies, was not an overnight process, but rather a prolonged one.

As mentioned earlier, written forms of communication tools were also found to be used to distribute knowledge. For example, a new insight derived from meetings can be sent through e-mails, or through company-wide newsletter, intranet, instant messaging tool. Some tools are more sophisticated, for example the use of the project management tool "Trello" in company B: a digital database, where all employees have their own account with their to-do-lists and action plans, that all employees can access, hence making it easier to coordinate and monitor each other's progress. These types of digital tools are the "Cyber" version of Nonaka and Konno's (1998) Ba, and can also be considered calls knowledge networks (Malone 2007), as they facilitate exchange of information when there is an asymmetry of needs and expectations between employees, since one employee can deposit knowledge into a database that another employee can use elsewhere in the organization when needed. While the before mentioned meetings have a two-fold purpose of being a platform for both production and distribution, we find in general that the majority of the digital tools mentioned serve simply the purpose of distributing knowledge. This is consistent with Hislop (2013) who argue that emails as a communication media is low in information richness and is more suitable for sharing of knowledge.

Sub-conclusion: Both digitals tools and meetings are cyber and physical platforms which serve as key components in transferring and/or converting the information provided by MCS into knowledge. The production and the distribution of knowledge is an intertwined and progressive process, where recurrent similar insights are produced over the course of a longer period.

5.2.3 Memorization/Mobilization of learning

The knowledge produced and distributed provided the ground for new decisions to emerge. As these decisions resulted in a revised action plan to be implemented, we can observe the last stage of memorization/ mobilization of the learning process as completed. As explained in the literature review, the knowledge memorization and mobilization stage could be categorized into being routine-based, and/or computer based.

As found in our case studies and referring once again back to table 1 in the empirics, most of the information given by the systems are codified into documents, excel and so on, and stored into digital databases that are accessible by everyone. Cyber ba, mentioned above in distribution of knowledge, also helps to store the produced knowledge. Hislop (2013) shares a similar view that information communication technologies can be used to codify knowledge.

New knowledge can also be codified when transformed into standard procedures, norms, rules (Huysman, Sven, & Heng, 1994; Levitt & March, 1988), as they then become embedded in the organization's memory and the collective memory of all the employees. An example of this can be seen in company B where the operating expense approval procedure was changed, simplified and re-learned: rather than having to get all costs approved by the CFO and board, the CEO now has a certain budget that he is allowed to spend without approval. This also resembles the "Exercising ba" suggested by Nonaka and Konno (1998), a context which facilitates the individuals' ability to internalize explicit knowledge made available.

In our empirical examples portraying the companies' major transition phases, we have seen that the production of new knowledge and learning, not only led to changes in strategies, but several management control systems can be changed[24], adopted, modified and/or removed, as a part in the revised action plan. Hereby, we will depict how manager have taken a decision to mobilize the new knowledge produced and correct the gap of the error detected.

In Company B, the sales strategy was changed as corrective measure to take to improve the fit between the company's sales strategy and it's environment. The following systems were either adopted or modified in this process:

> In Company B, the change in sales strategy also led to changes as well as the implementation of new MCS: the organizational chart (Guiding MCS) was fundamentally changed, as the sales team was rearranged into two teams targeting different customer groups. Furthermore, the following systems were implemented to provide clearer goals for the employees to work towards and to clarify operations protocols with external parties: sales targets (Information Planning MCS), written performance objectives (Information Planning MCS) and partnership policy (Guiding MCS).

In Company D, the lack of internal fit was corrected by a series of corrected measure, which includes the modification and removal of system MCS:

> In Company D on the other hand, the lack of clear responsibilities, unsatisfied customers and wrong employee incentives led to changes in the organizational structure (Guiding MCS), in the written job description (Guiding MCS) as well as the removal of the sales force compensation (Guiding MCS) to eliminate wrong incentives.

In Company C, the business model was changed as a revised action plan to correct the gap between the business offering and the vision, which affected systems to modified:

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[24] How management control systems can be changed as a result of the new knowledge created are presented in section 5.1.2. We observations and analysis suggest that they can either be adopted, modified or removed.

The introduction of a new business model in company C entailed a revised organizational chart (Guiding MCS), redefinition of core values (Guiding MCS), as well as new ways of calculating their customer acquisition costs customer profitability and product profitability(Information Evaluation MCS).

In Company A, a revised action plan including the adoption of new systems, modification and removal of some existing systems, were implemented in response to the lack of fit between the organization and its environment:

The revision of strategy in company A resulted in all three changes, removals and additions of MCS: the strategic milestones system was changed in design (Information Planning MCS) as they were no longer only defined by management but also by external investors and project milestones (Information Planning MCS) became more adapted to customers' feedback. Core Values (Guiding MCS) were defined and formalized for the first time, Finally, Business plans (Information Planning MCS) were removed, as they no longer saw a need for this system.

These examples suggest two things: 1. How MCS, in addition to stimulating learning by producing knowledge, can also become an outcome of learning. This is consistent with Kloot (1997) who suggest that the relationship between management control systems and organizational learning are "interwoven" (Kloot, 1997, p.69); and 2. How MCS have an effect on each other, as the knowledge deriving from the use of certain MCS proactively impacts the adoption, alteration or removal of other MCS.

Sub-conclusion: *The digital tools used for the distribution of knowledge are also used for the memorization of knowledge. In the last stage of memorization/mobilization, we can also see that the stimulating MCS, could in some cases also affect the design in other MCS.*

6. Discussion

In the following section, we try to take a critical stand point by trying to avoid being blinded by naïve beliefs regarding choice of theories, and theory applications, while still recognizing the established research within this field (Alvesson & Skoldberg, 1994). Therefore we aim to further discuss and problematize our findings presented in Section 5 Analysis. Firstly, we will discuss the applicability of the theories, secondly we will discuss our coding and classification of MCS roles, thirdly we will present our synthetized and revised model depicting the relationship between MCS and organizational learning.

6.1 The applicability and interpretation of Davila & Foster (2007)'s list of management control systems

The applicability of Davila & Foster (2007)'s list is a topic for discussion. The authors mentioned that this list is not a comprehensive list, but rather a list that covers the main systems within each functional area of the organization. In total, 47 out of 52 Management Control Systems are found either at one or more companies[25]. The three additional systems that were picked from Simons (1995) were largely present in our sample, hence we suggest that they could be added to the list. When breaking down per company, ranging from the smallest (youngest) to the largest (also oldest), interestingly we notice that the number of formalized systems increased from A (27 systems), B (36 systems), C (40 systems), however, Company D deviated from this pattern with 32 systems, lower than both B and C. These findings slightly deviates from the earlier studies of Davila & Foster (2005; 2007), who suggest that size and age are associated with the increased percentage of the systems being formalized. When reflecting critically, we believe that there might an over-representation of systems in the smaller companies, due to three aspects:

1. We adopt a broad interpretation of the systems, including various related systems or systems in different formats. For example, product portfolio plan in our interpretation could be interpreted as including both various products and different features of one product.

2. Many systems seem to overlap as interviewees find some of these equivalent to each other: for instance in company C, Sales force compensation system, Linking compensation to performance and Individual incentive programs are all considered the same, as the sales employees are the only ones whom have a formalized bonus system in place.

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[25] In total, 47 out of 52 Management Control Systems were formalized: 18 systems in all four companies; 22 in two or three companies; seven systems in one company. Five systems were non-existent in all four companies.

3. Many systems seem to overlap as well in terms of usage, for example the Customer relationship management system has in our case studies been found to incorporate reports on open sales, customer feedback, and sales targets among others.

Hence, consistent with Davila & Foster (2007) statement, that this list is relevant for companies with more than 50 employees, it can be argued to what extent this list is applicable for IT startups with fewer than 50 employees. Nonetheless, though there seems to be an over-representation of these systems in our sample, we still believe the majority of the systems are implemented. Moreover, as a side note, the overlaps mentioned in point 3 also lead us to question whether some systems presented in the list should rather be seen as intelligence tools used to carry out certain management controls, instead of being considered management control systems themselves.

6.2 The applicability of organizational learning and MCS model

Firstly, similarly to Davila & Foster's list of controls, the rather abstract and ambiguous description of each phases of organizational learning (Huber, 1991; Kloot, 1997; Batac & Carassus, 2009), without any clear concrete empirical definitions with which to compare our findings, left much room for interpretation. We have mainly chosen to follow Kloot's definition of organizational learning as it defines observable changes, and integrated this definition into the different stages of Batac & Carassus (2009)'s model. As such, we also acknowledge the synthetized model's weakness in only identifying MCS's linkage to observable organizational learning, since a detection of error needs to be happen and a changed implemented.

Secondly, our findings indicate that the three stages proposed are not a clear cut process, rather they are intertwined and in practical terms, one action can sometimes be reflected in all three stages, which makes it challenging to illustrate each stage separately. Thirdly, we argue this model may give the impression that the learning process is formalized as a single event, whereas in reality it occurs in several loops.

Despite some lack in clarity regarding the definition of each stage, and the static image of the process, we believe this model is suitable to identify the relationship between MCS and organizational learning; the static image allows us to more easily break down the learning process and identify the relationship between each phase, even though it is in reality very intertwined.

6.3 The role of Management Control Systems

The proactive role of Management Control Systems

We would also like to problematize the different roles management control systems can fulfill in order to stimulate organization learning. We would like to highlight that our classification of the systems into Information MCS and Guiding MCS, portrays the primary purpose these systems fulfill in a given learning situation, rather than their only purpose. In other words, we believe their primary role can change depending on the context and the design of the system, and that they can fulfill both roles at the same time. For example, Salesforce training programs were difficult to classify, as they can follow a set program that educates and develops employees in a certain way, guiding their behavior, but the program can also take the form of a routinized sessions where salespeople train and coach each other based on personal experiences (as in Company C), hence generating new information during every session. Various authors show support the view that MCS can fulfill different and multiple roles (Davila et al., 2009; Kloot, 1997). Similarly, the different types of information generated (Planning, Evaluation, Exploration) are also dependent on how a system is carried out, for instance customer satisfaction feedback has sometimes been an evaluating source of information and in other instances been described as customer provided concrete suggestions, and hence more of an explorative type of information. Therefore, we emphasize that the classification of these systems is quite contextual of organizational learning.

Management Control Systems as an outcome of learning

Adopted Management Control systems

Several systems were adopted as an outcome of learning in the case companies A (2 systems), B (4 systems) and C (2 systems). This is consistent with Davila et. al., (2009)'s findings, as they suggest that it is more probable to observe adoption as a learning outcome in young and growing startups. These three companies have all been growing in size during the observation period, whereas Company D remained rather constant in size and did not adopt any new systems either. In line with Davila (2005)'s findings, who suggest that increase in size are associated with the formalization of control systems, especially related to human resources management. Another proposed factor to drive emergence of systems is age, as Davila (2005) suggest that the company learn with age, even if the firm is not growing in size, accumulated learning can be translated into the emergence of MCS as an act of codifying routines. However, this does not seem to explain why Company D, the oldest company, has not adopted any systems. Other researchers pointed out that age and the formalization of MCS, may not always have a linear relationship (Luft & Shields, 2003). As firms become older, they may also become routinized in their operating practices. Therefore, we believe that they might have reached a saturation in terms of formal MCS needed.

Modification of management control systems

Interestingly, modification of MCS is a consistent pattern across all four companies: Company A (5 systems), Company B (5 systems), Company C (9 systems), Company D (2 systems). This suggests that management control systems do not only emerge as a result of learning, more commonly they also evolve in their design after being formalized. Although changing systems as an outcome of learning has been studied in established companies (Otley & Berry, 1994; Kloot, 1997; Batac and Carassus, 2009), we consider this insight provides some novel empirical evidence that contributes to startup and MCS theories, highlighting that the modification of systems is an area worth further investigating (Davila et al. 2009). All companies implemented some form of strategic change, which hence explain why many systems were adjusted, since MCS should be aligned with the company's strategy (Simons, 1994; Simons, 1995; Sandino, 2007).

Removal of management control systems

Lastly, a couple of systems were removed: Company A (1 system), Company B (1 system), Company D (3 systems), which yield an interesting finding, as many researchers have commented on the adoption of control systems (e.g. Davila & Foster, 2005), but few regarding the removal of the systems. More interestingly, the oldest and largest company, is the one that removed most systems. An explaining factor could be that with experience, it becomes not only more clear which systems need to be adopted (Davila & Foster, 2009) but also which systems need to be removed. Another question that comes to mind however, is whether the removal of these systems were due to wrong design and could hence add value if re-designed, or due to redundancy due to the company changing, or even if these were redundant in the first place. The answer to this question is difficult to answer, since the changes in our case studies were implemented too recently to retrospectively analyze the implications of the absence of these systems.

6.4.Synthesis – Revised model

In our analysis we find MCS and organizational learning have a recursive relationship: on the one hand the combined use of several MCS (Information and Guiding) can produce useful information that facilitate decision-making and stimulate learning. On the other, MCS can also become an outcome of learning (Otley D. , 1990). This is consistent with Kloot (1997) who proposes a "*closely integrated*" (p.69) relationship between the two. Further, this suggests that there is also an indirect interrelationship between different MCS, as some indirectly influence changes in others through the process of learning. We wish to highlight that although this is the case in our empirical examples, it does not necessarily mean that this is always the case.

Our empirical examples have mainly focused on major changes and learning moments, and hence it makes sense that more systems are involved in the learning process. However, we have also seen in our empirical examples that the information generated by MCS can sometimes yield a learning that is not the change in design of a MCS, for example Company A changed its company name as a result of learning. Also, not all examples of changed MCS were identified to be linked to a learning, which occurred from the usage of information provided by MCS. Therefore, we argue that a change in MCS can also stem from learning, other than the learnings stemming from interpreting information from MCS, for example the change in operating budget in Company A was due the requirement from external investors. Davila et al., (2009) illustrate this type influencing factor as external reasons (contract).

Therefore, we note that there are other factors influencing, or even possibly mediating the relationship between management control systems and organizational learning, which could be basis for further study, as they are out of scope of this study.

Moreover, as pointed out in section 6.2, we believe the stages in the learning process are not simply occurring in sequential order, but rather they are very closely intertwined and can occur almost simultaneously.

 That said, we now proceed to propose a revised model (see figure 10) of the relationship between MCS and organizational learning, where the aforementioned two points are not depicted in the model, for simplicity's sake.

Revised model illustrating the relation between MCS and organizational learning

Guiding MCS

Planning MCS → Information production

Evaluation MCS → Information production

Exploration MCS → Information production

Interpretation

Production of Knowledge

Distribution of knowledge

Added MCS

Modified MCS

Removed MCS

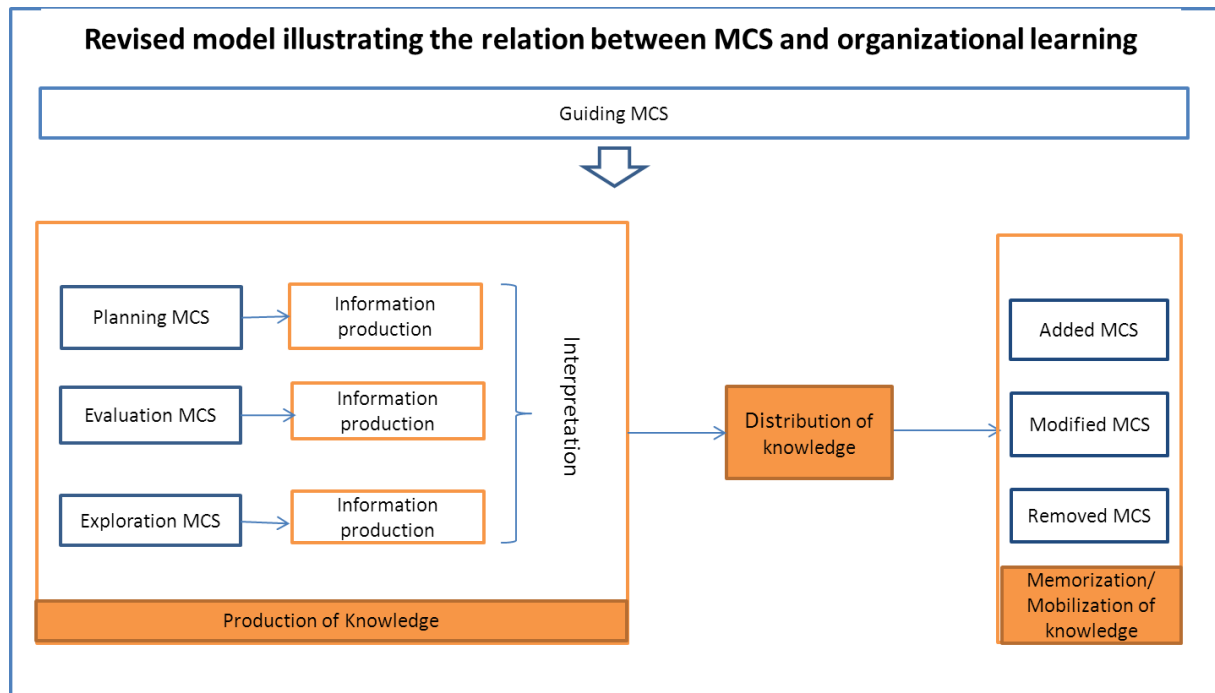Memorization/ Mobilization of knowledge

Figure 10 – The revised model illustrating the relation between MCS and organizational learning proposed by the thesis authors, based on the model developed by Batac & Carassus (2009).

7. Conclusion

In summary, the list consisting of 46 systems presented by Davila & Foster (2005) and additional three systems by Simons (1995) were revised, with seven systems modified and three new systems added based on empirical data, resulting in a total of 51 systems. The revised list is adapted to capture the main systems in the four companies included in the scope of the study. Five systems were identified as not formalized in our case studies, where the majority, 46 systems, were implemented by either some companies or all companies.

7.1 What are the Management Control Systems' roles in organizational learning in IT Startups?

7.1 .1 The Proactive Role of Management Control Systems in stimulating learning

We have seen that management control systems stimulate organizational learning in two ways. First MCS affect the learning process differently depending on their purpose: guiding MCS, as the name suggests, primarily guide employee behavior and define the underlying beliefs that determine how an organization thinks, behaves, and hence, impact what and how knowledge is used, shared and mobilized/memorized in the organization. For instance, core values serve as a foundation for the company's culture; mission statements set a common direction for all employees to work towards, approval procedures clarify what is accepted and what is not.

Information MCS, also as the name suggests, primarily generate new information periodically or regularly that helps detect an error i.e. a lack of internal fit or lack of fit between the organization's strategy and its environment. In order to do so, Information MCS can be further divided into Planning, Evaluation, and Exploration, as the use of these together enable the detection of error. For instance, Routine analysis of sales is an evaluation MCS that provides information regarding the company's current sales figures; it can be benchmarked against Sales projections provide information regarding expected revenue to detect any deviation; Customer satisfaction feedback can be considered as an exploration MCS which provide external information and serve as a source of inspiration for solutions/future opportunities.

7.1.2 The Reactive Role of Management Control Systems: an outcome of learning

Our empirical findings show that MCS have been adopted, modified or even removed during the observation period as a learning outcome. The adopted systems have been triggered by *chaos* or *learning* factors, which are consistent with findings in the literature (Davila et. al, 2009). Furthermore, it could be argued that the learning factor driving the adoption of MCS can also be considered as a factor-for-modification of MCS, as we have seen that some MCS are modified as a

result of trial-and-error or learning-by-doing. Very interesting to note, is that some MCS are also removed as a result of learning, due to wrong design, redundancy, or "de-formalization" i.e. making a system informal. These factors respectively suggest three implications. First, the importance of appropriate system design is highlighted (Sandino, 2007). Second, the management team's needs and focus regarding the managing of certain parts of the business, change as the company ages and grows. Third, sometimes an informal approach is more suitable for the management of startup companies, as supported by various authors (Kloot, 1997).

Overall these changes in MCS that occurred during a relatively short time-span, suggest that MCS are very dynamic, especially in the early phases of an organization's life-cycle. These changes could also be attributed to the dynamic nature of the IT industry, which forces organizations to re-adjust their strategies and hence their MCS in order to ensure alignment.

7.2. How do Management Control Systems relate to the stages of Organizational Learning in IT Startups?

When new knowledge is produced, distributed and mobilized into an action plan, organizational change and learning have occurred. Our findings confirm that there is a recursive relationship between MCS and organizational learning.

7.2.1 Production of knowledge

We have seen that MCS stimulate learning as they provide the basis for new knowledge to emerge within the organization: when various information generated by different MCS, is combined and interpreted together, then new knowledge is produced. Often, the MCS that are combined complement each other: an Information Planning MCS will frequently be used together with an Information Evaluation MCS, since a Planning MCS in itself does not yield enough useful information to be converted into knowledge. Usually Guiding MCS have more of an overall impact on the stages of learning in how employees produce, share and memorize knowledge. In this stage of the learning process, it most often guides the decision-making.

7.2.2 Distribution of knowledge

Both digital tools and face-to-face interaction, mostly in the form of meetings are used a communication channels to share knowledge within the company. Meetings especially are key components in the production and the sharing of knowledge. Therefore, we have seen that the production and the distribution of knowledge is an intertwined and progressive process, where recurrent similar insights are produced over the course of a longer period. Indeed, it is very difficult to separate these two stages of learning in reality.

7.2.3 Memorization/Mobilization of knowledge

The digital tools used and routines used for distribution of knowledge can also be used for the memorization of knowledge. As shown in the first part of our analysis, MCS can contribute to learning but can also be an outcome of learning. In this phase we have however demonstrated how the proactive MCS that stimulate the production of knowledge and initiation of change, can therefore indirectly influence the design in other MCS.

Based on these findings, a revised model depicting the relationship between MCS and organizational learning has been proposed in section 6. 4, see figure 10.

7.3. Theoretical and Practical Implications

7.3.1.Theoretical implications

The authors hope to have contributed to the existing literature on three aspects:

The definition of the list of management control systems were clarified and interpreted, as well as other useful systems identified. The list of systems were found to be relevant for companies in the early stage of life-cycle with only 6-9 employees as well as larger companies in the growth-phase with nearly 35 employees. Further elaborating on contributions to the field of research about the application of the list on startup companies, Davila et al. (2009) mentioned that MCS, after being adopted, can develop into a more sophisticated version and suggest this as an area of further research. Hereby, we have demonstrated that management control system change over time, as the organization learns, to become more sophisticated in some cases, or they can also be removed as an additional insight.

Exploring the relationship between management control systems and organizational learning, we further extended by work by Batac and Carassus (2009), by sharpening the definition of the learning stages: production, distribution and memorization, as well as illustrating the proactive role in greater detail by suggesting how MCS, used to generate new information or to guide employee behavior, can used to facilitate learning when being combined. In addition, the interrelationship between management control systems and organizational learning, as mentioned by various authors to be either proactive (Horngren and Foster, 1987) , reactive (Den Hertog, 1978), or recursive (Kloot, 1997), was illustrated with empirical evidence in order to gain a more detailed understanding the process of this interrelationship.

7.3.2 Practical implications

From a managerial perspective, our study demonstrated that it is important to consider not only the appropriate design and implementation of management control systems, but also the continual revision, update and modification of these to ensure alignment within the organization as well as between the organization and its environment. Also it is important to consider how these systems, especially guiding systems can be designed and used in the best way to motivate employees. Moreover, we see that management control systems are also dependent on various tools in order for knowledge to be produced and shared properly. Sophisticated but easy-to-use tools, such as Salesforce or Trello, facilitate the management of several controls and of the daily operations. Furthermore, face-to-face interaction, mostly in the form of meetings, seem to be key in the

creation and distribution of knowledge, as well as strengthening the bond among employees, as shown in company B.

7.4 Limitations

Limitations regarding empirical findings

We can identify three limitations in our empirical findings. First, as explained in the section 6.1, several factors might have caused our data to be biased towards displaying more formalized systems than in reality, due to overlap between management control systems, a broad interpretation of the definition of each system, and the equaling of certain systems by interviewees. Second, based on our chosen model of organizational learning, we have limited our findings to mostly observable and major changes that have occurred in our case studies. Hence our study does not adequately portray more minor changes, or more implicit changes in the range of potential behaviors (Huber, 1991). On the other hand, we believe that the latter is extremely difficult to identify. Third, because we did not include informal controls in this study, our findings might depict a bias towards the relative importance of formalized system in the context of organizational learning. In addition, it could also be that formal and informal controls have complementary roles in the context of organizational learning.

Limitations regarding theory and analytical findings

As mentioned in section 3.5 regarding the quality and trustworthiness of our research study, our analysis might present weaknesses regarding our interpretation of theory, which can have negatively influenced both our coding of as well as our interpretation of the empirical findings.

Limitations regarding generalizability of the study

Despite having limited our scope to IT startups in Sweden, we believe that the research design of this study can be replicated to other companies in the same industry, other industries, as well as more mature firms, since the topic of MCS and organizational learning are relevant for any organization in today's dynamic environment. However, because we have selected our case studies based on certain criteria that enhance the probability of them having implemented MCS early on, the findings of this study might not be reflective of reality amongst all kinds of startups, since other startups might be much more informally managed.

7.5 Suggestions for future research

Considering the findings in our study, we hereby present our suggestions for future research.

The evolution of MCS in design or removal is an worth further investigating. Davila et al.(2009) have presented factors-for-adoption of MCS which could potentially be tested as factors-for-modification and factors-for-removal of MCS as well.

Also, the combinative use of MCS generated in this study can be further explored. We suggested different types of information management control systems can fulfill and suggest that when used in combination during meetings or other forums of discussion, knowledge can be generated. The next step could be to explore whether there are patterns emerging in the combination of the different types of MCS (Planning, Evaluation, Exploration, Guiding).

Furthermore, we have chosen to focus solely on startups within the IT industry, as a future area of research, one could use the theoretical model as well as methodology documented in this study to study startups in other industries. Also, we have noticed interesting variations between the companies, which might be due to their differences in size, age and business model. Therefore, a study that highlights the comparison between companies in different life-stages, ranging from birth, early, growth, mature and declining would be interesting.

Lastly, this study adopted a longitudinal study approach, however, due to practical constraints the observation period was only 10 months. For future studies, the study period could be prolonged and the points of observation during the observation period increased, to gain even more in-depth knowledge about the mundane interactions between management control systems and organizational learning.

8. Appendices

Appendix 1: The list of management control systems presented by Davila & Foster (2007, p.915)

Systems and Processes	Systems and Processes
Strategic planning	**Product development management**
Definition of strategic (nonfinancial) milestones	Project milestones
Customer development plan (plan to develop market)	Product concept testing process
Headcount/human capital development plan	Product development documentation
Product portfolio plan (plan about future products)	Reports comparing actual progress to plan
Investment budget	Project selection process
Financial planning	Product portfolio roadmap
Cash flow projections	Budget for development projects
Operating budget	Project team composition guidelines
Sales projections	**Sales management:**
Financial evaluation	Sales targets for salespeople
Capital investment approval procedures	Market research projects
Operating expenses approval procedures	Sales force compensation system
Routines analysis of financial performance against target	Sales force hiring and firing policies
Customer acquisition costs	Reports on open sales
Customer profitability analysis	Customer satisfaction feedback
Product profitability analysis	Sales process manual
Human resource planning	Sales force training program
Core values	Marketing collaboration policies
Mission statement	Customer relationship management system
Organizational chart	**Partnership management**
Codes of conduct	Partnership development plan
Written job descriptions	Policy for partnerships
Orientation program for new employees	Partnership milestones
Company-wide newsletter	Partner monitoring systems
Human resource evaluation	
Written performance objectives for managers	
Written Performance evaluation reports	
Linking compensation to performance	
Individual incentive programs	

Appendix 2: Size and time-to-adoption (Davila & Foster, 2007)

Panel B: Venture Capital-Backed Company Sample

Key:

Financial Planning	HR Planning
Strategic Planning	Sales/Marketing
Financial Evaluation	HR Evaluation
Product Development	Partnerships
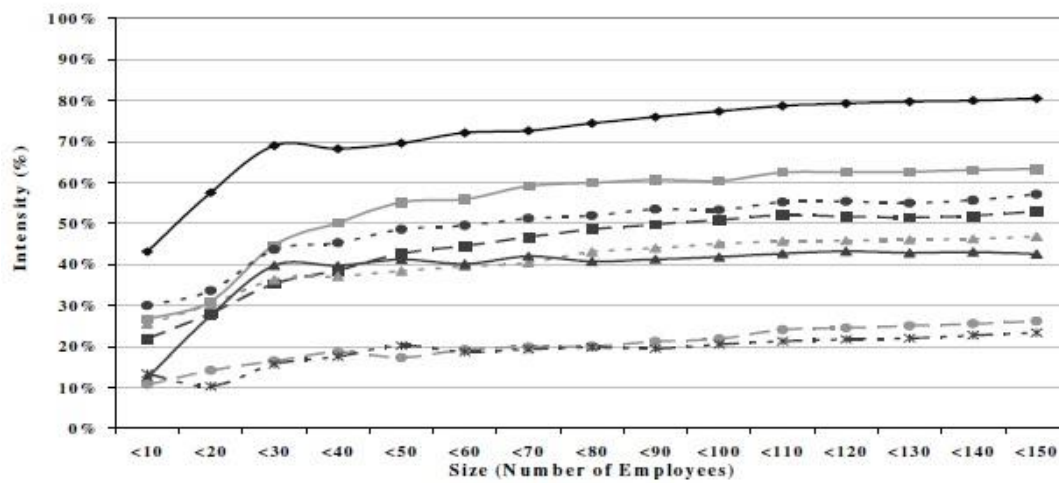
Each individual system within each category in Table 2 is equally weighted. The percentage of systems adopted in each category is plotted over time since company founding.

Appendix 3: Interview template

First-round interview template:

A: General question regarding the company's history and strategy:

1. Please describe your title and role within the company

2. When was the company officially founded and by whom?

3. How did the founders come up with the business idea?

4. Please describe your business model and your company's products/services.

5. How many employees are working in your company, full-time and part-time?

6. What is your long-term vision or short-term objectives?

7. What was the main turning points or phases in the history of the company?

8. What does the competitive landscape look like? Competitors?

9. Who are your customers and how do you target them?

10. How is the organization structured?

11. Please describe the meeting structure in your company?

12. What kind of routines do you have in place that facilitates information acquisition, distribution and knowledge sharing?

B: Specific questions regarding the management control systems:

1. For the following systems, please specify if you have formalized them. "*Formalized is defined as having documented a process and/or periodically and purposefully executing the process".*

2. For all formalized systems, please specify the tools used to carry out this system. For example, documents, excel etc.

3. For all formalized systems, please specify how often this system is carried out. For example, weekly, monthly, quarterly etc.

4. For all formalized systems, please specify where and when this information is discussed. For example, during company-wide meetings, annual conferences etc.

5. For all formalized systems, why did you adopt these systems and have them been changed and why?

6. In your words, what is the purpose of using the following formalized systems? Also add additional comments regarding these systems.

7. Please provide us information about additional formal systems that you use, which is not included in this list and specify how it is used according to: tools, forum as well as why it is used?

Examples to illustrate how the questions are presented together with the list of systems:

Systems and Processes	Formalized/ Non-formlized	Specific tools	Frequency	Forum	Purpose	Why
E.g. Cash flow projects	Formalized	Excel	Weekly	Management Meetings	Set a plan	We have learned that we need it

Second-round interview template:

A: General question regarding the company's history and strategy:

1. Where is the company now? Have the long and short term objectives changed?

2. What changes has taken place since the last interview date? With regard to following aspects:

    a. Strategy and objectives

    b. Business Model and Product offering

    c. Internal structure (e.g. meetings, routine for information/knowledge sharing)

    d. Customers/Partners/External stakeholders

    e. Others (please also provide other major or minor changes)

3. For all the changes, please provide details about:

    a. What was the situation and what made you realized that a change is necessary?

    b. How and why did it happen and who was involved in the decision-making process?

    c. What was the outcome of the change?

B: Specific questions regarding the management control systems:

1. Regarding the systems that were not formalized in 2012, please specify if any of the systems have been formalized now. "*Formalized is defined as having documented a process and/or periodically and purposefully executing the process".*

    a. Why was this system formalized?

    b. Please specify the usage of the systems according to: tools, forum, frequency and purpose.

2. Following up on systems that were formalized in 2012, please specify if any of the systems is changed in any way. "*Changed is defined as either a change in objective or a change in methods*".

    a. Why was this systems changed?

    b. How is the new system different from the old system with regard to: tools, forum, frequency and purpose.

3. Following up on systems that were formalized in 2012, please specify if any of the systems is removed. "*Removed is defined as going back to the informal approach or being non-existent.*"

    a. Why was this system removed?

4. Please provide us information about additional formal systems that you either added/changed/removed since the last round of interview, which is not included this list and not mentioned and specify how it is used according to: tools, forum as well as why?

Examples to illustrate how the questions are presented together with the list of systems:

Systems and Processes	Added /changed /removed	Specific tools	Frequency	Forum	Purpose	Why
E.g. Cash flow projects	Changed	Old: Document New: Excel	Old: Weekly New: Monthly	Company-wide	Old: Monitor New: Plan	More efficient

Appendix 4: Interpretation and definition of formal Management Control Systems

Systems and Processes	Definition	Formalization category
Strategic planning		
Definition of strategic (nonfinancial) milestones	Regularly documented milestones that concern the entire company	**Category 2**
Customer development plan (plan to develop market)	Documented plans and carried out regularly, regarding which types of customers the company wants to attract and/or customer headcount in the coming months or years	**Category 2**
Headcount/human capital development plan	Documented plans and carried out regularly, regarding how and/or by many employees the company wishes to grow in the coming months or years, carried out regularly	**Category 2**
Product portfolio plan (plan about future products)	Documented plans or regular discussions about which products could potentially be included in the company's portfolio in the coming months or years	**Category 2**
Investment budget	Documented budget and carried out regularly, for any given period that is invested in the company	**Category 2**
Financial planning		
Cash flow projections	Carry out cash flow forecasts on regular basis	**Category 2**
Operating budget	A documented budget for any given period that is used for the company's operations	**Category 2**
Sales projections	Sales forecasts carried out by the company	**Category 2**
Financial evaluation		
Capital investment approval procedures	A documented and/or regularly executed approval procedure that is embedded in employees' memory	**Category 2**
Operating expenses approval procedures	A documented and/or regularly executed approval procedure that is embedded in employees' memory	**Category 2**
Routine analysis of financial performance against target	Regular discussions about the financial status of the company in comparison with its financial targets	**Category 2**
Product profitability analysis	Regular and documented calculations on product/service/project profitability	**Category 2**
Customer profitability analysis	Regular and documented calculations on customer profitability	**Category 2**
Customer acquisition costs analysis	Regular and documented calculations on customer acquisition costs	**Category 2**
Human resource planning		
Core values	Explicitly expressed/documented keywords that represent the company's culture and guide employee behavior	**Category 1**
Mission statement	An documented vision, mission, of what the company stands for, what it wants to fulfill and/or how it wants to be perceived by customers	**Category 1**
Organizational chart	A documented diagram depicting every role in the company and their relative ranks/relationships, and/or a routinely	**Category 1**

	followed reporting structure that is embedded in every employee's memory	
Codes of conduct	Documented policies regarding what and how an employee can/should and cannot/should not do and behave	**Category 1**
Written job descriptions	Documented descriptions of the responsibilities that a position/role requires	**Category 1**
Orientation program for new employees **Note:** Changed from "Orientation program **from** new employees" to " Orientation program **for** new employees"	A documented program or routine that employees must go through when newly recruited, to fulfill certain tasks and get acquainted with the company's "ways of doing things".	**Category 2**
Company-wide newsletter	Documented newsletter, physical or virtual, containing news and briefings that is sent out on a regular basis to all employees of the company.	**Category 1**
Human resource evaluation		
Written performance objectives for managers and employees **Note:** Changed from "Written performance objectives for managers" to "Written performance objectives for managers and employees"	Documented performance financial and/or non-financial goals for managers and/or employees.	**Category 1**
Written performance evaluation reports	Documented and/or verbal evaluation of employees' performance	**Category 1**
Professional Development Dialogues **Note:** This system was mentioned by three companies, therefore the thesis authors consider it to be relevant to add to the list.	Dialogue between subordinate and manager regarding professional improvements and/or professional career path wishes.	**Category 2**
Linking compensation to performance	Financial or non- financial rewards that are routinely given out for a positive performance by an employee or team	**Category 2**
Individual incentive programs	Routine for individual rewards/incentives such as company stock, bonus programs which create incentive for individuals to perform well	**Category 2**
Product development management		
Project milestones	Documented milestones for projects and/or a specific product carried out regularly	**Category 2**
Product concept testing process	Regular testing of a product or idea, often together with the customer	**Category 2**
Reports comparing actual progress to plan	Documented and regular discussions about project/product development status in comparison with its milestones	**Category 2**
Project selection process	Regular project or product feature selection	**Category 2**
Product portfolio roadmap	Documented Product and/or product feature portfolio roadmap	**Category 1**
Product development documentation **Note:** This systems was mentioned by two companies, therefore it was added to the list.	Routine to regularly documentation process to codify technical codes and features necessary to develop a product	**Category 2**
Budget for development projects	A documented budget, regularly carried out, for any given	**Category 2**

	period, spent on product development,	
Project team composition guidelines	Documented and/or routinely followed rules that guide how project teams are composed	**Category 1**
Sales management		
Sales targets for salespeople	Customer or financial targets for individual salespeople and/or sales teams regularly carried out	**Category 2**
Market research projects	Documented market research projects with regard to competitors, trends, new opportunities	**Category 1**
Sales force compensation system	Documented policy for financial or non-financial rewards for target obtainment	**Category 1**
Sales force hiring policies and firing policies	Documented criteria and rules that determine the recruitment and firing of sales employees	**Category 1**
Reports on open sales	Documented reports on open leads	**Category 1**
Customer satisfaction feedback	Feedback from customers about level of satisfaction, areas of improvement, wishes through surveys, forms and/or regular verbal discussions	**Category 2**
Routine analysis of sales **Note**: This system was added to the list as it was mentioned by three companies	Regular discussions about the current sales status of the company in comparison with its sales targets	**Category 2**
Sales process manual	Documented guidelines for pitching sales	**Category 1**
Sales force training program	Program or regular team discussions designed to improve sales skills	**Category 2**
Marketing collaboration policies	Documented rules that dictate with whom and how to collaborate on marketing projects	**Category 1**
Customer relationship management system	A system that continuously manages all customer and/or potential customer related activity	**Category 2**
Partnership management		
Partnership development plan	Documented plan regarding which types of partners the company wants to do business with in the coming months or year carried out regularly	**Category 2**
Policy for partnerships	Documented criteria for establishing a partnership and how to do business with a partner	**Category 1**
Partnership milestones	Documented goals for partnership development plan carried out periodically	**Category 2**
Partner monitoring systems	A system that monitors progress with partners on a regular basis	**Category 2**
Other Systems (Simons 1995)		
Intelligence systems	Systems that continuously monitor and gather any data relevant for the company, such as KPIs	**Category 2**
Business plans	Documented plans designed to provide an overview of the company's business strategy and business proposal	**Category 1**
Standard cost accounting systems	Systems that regularly provide accounting reports	**Category 2**

Appendix 5: The coding and categorization of how MCS can facilitate organization learning

Category label	Guiding Purpose	Codes (Purpose)	Systems and Processes	Illustrating quotes
Guiding MCS	The system help guiding employee behaviour	Guide employee behavior by setting an abstract goal	Core values	The Developer in Company A (2012) explains "We are only allowed to work on something that creates value for the customer"; The Sales team lead at Company B illustrate this as "Simplicity is a core value and obviousness: everything should be obvious";
			Mission statement	"Our mission is that it should be easy to use."(Developer, Company A, 2012); "People are complex creatures. If we want the company to grow then our employees need to be united on the same page" (CEO Company A, 2013). "People are only engaged if they believe in it. You always need a dream vision so that people do not quit" (CEO, Company B, 2013)
		Set the overall structure and guidelines for the employees and organization	Organizational chart	"We have more of a report chart than an organizational chart, where for instance the CTO reports to the Lead developer for practical reasons. The Lead developer coordinates all the developers and takes care of purchases". (CEO, Company B, 2012); We have changed our organization structure [...] the sales team has a sub-culture and the tech team has their own sub-culture [...] We changed the organization structure because it did not work optimally before. The incentives were not right to support the collaboration between the teams (COO, Company D, 2013)
			Written job descriptions	The COO at Company C commented: "We have clear job descriptions for everyone and what the job responsibilities include and what is expected to be delivered."
			Product development documentation	"we have started to document codes and such because the information otherwise gets lost if someone quits" (Business Developer, Company C, 2013)
		Define a rule or a procedure which the employees should follow	Capital investment approval procedures	The CEO at Company A commented "If it is large purchase, which exceeds 5000 - 10000 SEK, then all three co-founders have to approve of the purchase before it goes through."
			Operating expenses approval procedures	"we do have a list of what you allowed to purchase […] We trust people and give everyone access to the company's credit card numbers." (CEO, Company A, 2012).
			Policy for partnerships	"We have started to document the policies, as it is useful now that we are targeting larger companies" (CEO, Company B,2013)
		Motivate employee by rewarding certain behavior	Linking compensation to performance	"Every seller has a commission on what he/she sells as a part of the variable salary, it is distributed quarterly. There are individual salary reviews/negotiations, everyone gets a share of the profit." (COO, Company C, 2012)
			Individual incentive programs	"You get invited to it. If you've done well, then you get bonuses, you get invited. Or if you come up with an idea." (COO, Company C, 2012)

			Sales force compensation system	Company C and the COO explains: "The commission system is only for sales people and it is based on individual performance."
			Sales force training program	" The CEO and the existing sales people coach the new sales people. They also go through the same training as the Campaign Analyst to learn about the company's products and services." (Business Area Director, Company D, 2013).
		Train employees to perform	Sales process manual	"We have it and it is called sales pipeline methodology. It specifies how the sales people should report the sales and follow on the sales etc. All sales people use it." (Business Area Director, Company D, 2013).
			Orientation program from new employees	"We have a kick-off day (first day of the job) and it is also included in the employee handbook." (CEO, Company A, 2012)
Role of MCS	Information purpose	Codes (Purpose)	Systems and Processes	Illustrating quotes
		Set milestones for the organization on multiple levels	Definition of strategic (nonfinancial) milestones	Yes we define these with the investors. We have technical and market milestones set for the 3 coming months, for the next 6 months, and for the next year. It is very important that everyone is onboard and agree on the milestones, because they affect everyone. These are discussed on a weekly basis and on a monthly basis with the investors. (CEO, Company A)
			Project milestones	"We set up different milestones and different goals and then we follow up diligently." (Sales team lead, Company B, 2012)
			Partnership milestones	"We have these milestones in our plan, which is communicated to everyone in the company" (CEO, Company B, 2013)
Information MCS	Planning	Define a plan for the organization on multiple levels	Customer development plan (plan to develop market)	"We have re-defined out target customer groups, from small to large companies, to medium-sized companies and re-focusing its efforts and marketing strategies according to new their new targets." (CEO, Company B, 2013)
			Product portfolio plan (plan about future products)	"We continuously look at how we can diversify our services, news ways of delivering such as being more part of the customer's team and working at the customer's office. This is discussed during management meetings" (Business Area Director, Company D)
			Partnership development plan	"We have three categories of volume partners: System partners, Marketing partners, and volume partners. We have adjusted these plans a few times, but now we have a good plan." (CEO, Company B, 2013)
			Product portfolio roadmap	"We have a product and then we will add different features on it. Our features could also be regarded as the road map of our products." (Developer, Company A, 2012)
			Business plans	"Our goals are changing. The important aspect of the business plans is the overall direction and the budgets." (CEO, Company D, 2012).
		Define the financial goals for the organization	Investment budget	"The investment budget is very important and we have a clear plan" and the Business Area Director mentioned that "The investments budget is decided on a yearly basis and presented by the CFO."(CEO, Company A, 2013)

	on multiple levels	Cash flow projections	"We have monthly board meetings and we work with a 12-month rolling forecast" (Sales Team Lead, Company B, 2012).
		Operating budget	"Every month we have a cost limit on our burn rate, so-called action and projected burn rate […] The burn rate includes wages (the biggest cost), server, facility, travel expenses, mobile expenses, conferences etc." (CEO, Company A, 2012)
		Sales projections	"We have monthly figures in excel and google docs. We discuss these during weekly sales meetings" (COO, Company, 2012)
		Budget for development projects	All departments have their own budget. For example sales have their own budgets, IT their own, and marketing as well etc." (COO, Company C, 2012).
	Set the measureble goals for employees	Sales targets for salespeople	"The targets are set by the management team and the board. It is done once per year together with the budget. It is broken down to the target per person per month. For Client Directors, it is about how their product portfolio should develop over time." (Business Area Director, Company D, 2013)
		Professional Development Dialogues	We have the development dialogues once every six months." (Business Area Director, Company D, 2013)
		Written performance objectives for managers and employees	"We have sales budgets for salespeople, quality targets for production people" (Business developer, Company C, 2012)
Evaluation	Evaluate the performance against pre-set goals	Routine analysis of financial performance against target	"As soon as we start a project we set up goals and afterwards evaluate according to these goals. We have a couple of different web tools which allow us to follow up on both financial goals but soft "values/targets" as well". (COO, Company C, 2012)
		Routine analysis of sales	"We discuss what has gone well and what hasn't on a weekly basis. […] We go through sales cases and discuss what has been said and what has gone well and what hasn't." (COO, Company C, 2013).
		Written performance evaluation reports	" We have a 360 evaluation, we hand out a survey to the six closest colleagues who will evaluate you […] It applies for all employees including managers." (COO, Company C, 2013)
		Reports comparing actual progress to plan	"We have reports that we go through under our management meetings every Fridays. The project leaders follow up every Thursdays on how the projects is going according to plan." (COO, Company C, 2012)
	Evaluating performing by calculating KPI	Customer acquisition costs analysis	"The sales team is evaluated quarterly and reports the number of hours(costs) spent on getting customers". (COO, Company C, 2013)
		Customer profitability analysis	"We have a system that measures cost per customer and revenue per customer […] it is crucial for us to know how much time we spend on each customer and how much revenue each customer generates." (The CEO of Company D, 2012)
		Product profitability analysis	"We have three products but actually just one product that is digital signing and that can be used in different ways: on a e-reader, via email or through the website […] And we analyze how the customers use the features."(CEO, Company B, 2012).

		Define the routine for evaluation	Product concept testing process	"If something is finished, then somebody need to test it [...] We put the post its on the wall and divide them into four categories: do now, plan next, ice box (for the future), done." (CEO, Company A, 2012).
			Project selection process	"A suggestion list is presented every other week, decisions are taken during the board meeting every other Thursday" (CEO, Company B, 2012)
		Provide overview of the performance	Company-wide newsletter	"We send out a newsletter every Friday with updates on how many members we have in the database, which projects are ongoing, if there are any newly recruited employees. It is very appreciated". (COO, Company C, 2013)
			Standard cost accounting systems	Company A hire an accounting agency to perform this task, whereas the other companies use various system within the company, for example Accounting System "Proactive Economy" (CEO, Company B, 2012) and Accounting System "Visma" (COO, Company D, 2012).
Exploration		Capturing external information and identifying new opportunities	Partner monitoring systems	"We monitor our customers regularly and gather data about them regularly" (CEO, Company B, 2013)
			Market research projects	"We test different channels and we also perform some market-sizing"(CEO, Company A, 2012).
			Customer satisfaction feedback	" We send out surveys after each project" (COO, Company C, 2013) and "we conduct this once per year " (Business Area Director, Company D, 2013). " We have set up a routine to capture the customer feedback through their support system on a frequent basis" (Developer, Company A, 2012).
			Customer relationship management system	We work a lot with our customer relationship management system. Before we use to have High-rise and now we are upgrading to Salesforce." (Business Developer at Company C, 2012).
			Reports on open sales	Business Developer at Company C (2012) responded: "We have a CRM system where we log in all interaction with new customers and prospects."
			Intelligence systems	In our case, it is included in our product. We get data about what our clients do with the product. We have not studied other intelligence systems that much" (CEO, Company A, 2012)

Appendix 6: Management Control Systems as outcome of learning

Systems and Processes	Outcome	A	B	C	D	Illustrative quotes
Written performance objectives for managers and employees	Added		x			"We aim to have clear performance objectives per team as well as sales targets for the growth and the partner team […] in order to set meaningful goals, I have worked on it together with my mentor for half a year" (CEO, Company B, 2013)
Sales targets	Added		x			"As we changed sales strategy, we needed to have targets. I discussed with my mentor to set the new targets so that it is meaningful." (CEO, Company B, 2013)
Product development documentation	Added			x		"We started documenting all product development information, due to earlier crisis that occurs when key employees left the company" (Business Developer, Company C, 2013)
Written job description	Added		x	x		"[…]some time last year, we realized that it pays off to document the job descriptions" (CEO, Company B, 2013).
Core Values	Added	x				"As we revised our strategy, we realised that we need to communicate our core values better" (CPO, Company A, 2013)
Partnership policy	Added		x			We realised that this is needed in our company as we change into targeting larger telecom companies (CEO, Company B, 2013)
Company-wide Newsletter	Added			x		As we have grown rapidly, it is difficult to know what others are doing. Therefore, we decided to send out a newsletter every Friday with updates on how many members we have in the database, which projects are ongoing, if there are newly recruited employees". (Business Developer, Company C, 2013)
Organizational Chart	Changed		x	x	X	"Before, the responsibilities were overlapping and ambiguous. For example, the campaign analysts received directions for two different persons. This resulted in bottlenecks […] chaos and frustration. We have recently made a significant change the organizational structure. Now, new roles were formed and the responsibilities were reallocated." (Business Area Director, Company D, 2013).
Operating expenses approval procedure	Changed		X			"We have adjusted and simplified the system […] Before, when the CEO wanted to make a purchase, he needed approval from both the board and the CFO. Now, he doesn't need it anymore if the purchase is under 5 000 SEK" (CEO, Company B, 2013)
Company wide newsletter	Changed		x			We had it once before, but we have changed the format now. After some trial and errors, once a week we sent out a short newsletter and once per month a longer version. Before, the newsletter contained too much storytelling and the respond was that it was difficult to get an overview. Now, we have changed it to including a financial update and some brief comments." (CEO, Company B, 2013).
Written job description	Changed				X	"We have written job descriptions. After a new role is being created, for example "Client Director". It is continuously redesigned. If someone does not have the same understanding of his or her role, then we would sit down and have a discussion about it and then eventually revise it" (Business Area Director, Company D, 2013).
Strategic milestones	Changed	X				"We now include our investors in our meetings as they require it" (CPO, Company, 2013)
Customer acquisition cost	Changed			x		"We have changed it into also including the new product" (COO, Company C, 2013)
Customer profitability analysis	Changed			x		"We have changed it into also including the new product" (COO, Company C, 2013)
Product profitability analysis	Changed			x		"We have changed it into also including the new product" (COO, Company C, 2013)

Core Values	Changed			x		"As we grow, we realised that we need to change our values, into communicating it more clearly" (Business Developer, Company C, 2013)
Customer relationship management system	Changed	x	x	x		We have changed our systems, by adopting new systems, a customer relationship management system (Zeldesk), which functions as a system helpdesk, integrated with social media, to keep in contact with existing customers." (CPO, Company A)
Standard cost accounting systems	Changed			x		We have previously outsourced it but now we are doing it inhouse again. When we were outsourcing we weren't getting good reports (COO, Company C, 2013).
Cash flow projections	Changed	x		x		"Before, we only reported to ourselves. Now we sent these documents to our investors on a quarterly basis. It is a requirement from them. Because, they are a risk capital company, which have other stakeholders. ." (CPO, Company C, 2013)
Operating budget	Changed	x				Before, we only reported to ourselves. Now we sent these documents to our investors on a quarterly basis. It is a requirement from them. Because, they are a risk capital company, which have other stakeholders. . (CPO, Company C, 2013)
Sales force compensation	Removed				X	*We had it but we removed the bonus program, because it caused the sales team to focus too much on their bonuses and too little attention was devoted to create value for the customers."* (Business Area Director, Company D, 2013)
Linking bonus to compensation	Removed				X	*We had it but we removed the bonus program, because it caused the sales team to focus too much on their bonuses and too little attention was devoted to create value for the customers."* (Business Area Director, Company D, 2013)
Professional development dialogues	Removed		x			"I trust my radar […] I can see when people are dissatisfied, [formal] development dialogues are need at bigger companies" (CEO, Company B, 2012)
Written Performance evaluation reports	Removed				X	*"We had it before, but we removed it as it became too much administration. Instead, we work with continuous feedback nowadays."* (Business Area Director, Company D, 2013).
Business plans	Removed	x				"We no longer need them as we only focus to go-to-market now" (CEO, Company A, 2013)

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