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## **Management Control in Knowledge-intensive Firms:**

*The impact of growth and knowledge on Management  
Control Systems*

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## Abstract

<b>Title</b>	Management Control in Knowledge-Intensive Firms: The impact of growth and knowledge on Management Control Systems
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<b>Key Words</b>	Management Control, Knowledge, Growth, Uncertainty, Culture
<b>Purpose</b>	This thesis will examine how knowledge intensity and growth in an organization impact the management control system package.
<b>Methodology</b>	The methodology is based on a qualitative approach carried out in the form of a multiple case study. The method of reasoning is a deductive approach.
<b>Theoretical Framework</b>	This thesis will apply the Malmi and Brown MCS package model (2008) within the frame of contingency theory, regarding knowledge relatedness and growth as the primary contingency factors. Malmi and Brown's (2008) MSC control package is chosen as the framework as it provides a comprehensive management control package.
<b>Empirical Foundation</b>	The empirical data presented in this thesis is in the form of questionnaires and interviews with three case companies. The data was used to analyze how growth and knowledge impact the contents and structure of the management control system package in knowledge-intensive firms, specifically in IT companies.
<b>Conclusions</b>	By combining the factors of knowledge and growth into a single study, it was found that knowledge is a more significant contingent factor than growth in determining the management control system. Knowledge management is important throughout the entire life-cycle, while growth only has a significant role until a certain phase is reached.

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# 1. Introduction

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*The aim of this chapter is to outline the purpose of the thesis and the research question. Firstly a background to the topic will be presented followed by the main problem. The purpose and research question is defined along with the scope and limitations of the thesis. Finally the structure of the thesis will be presented.*

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## 1.1 Background

### 1.1.1 Knowledge-intensive Firms

According to the popular idea formulated by Toffler (1980) three major eras can be distinguished in the development of civilization. These phases are identified as waves, i.e. the agricultural revolution thousands of years ago being the first wave, the industrial revolution approximately 300 years ago considered to be the second wave, and the third wave, known as the information age has just begun. While the industrial era is characterized by large manufacturing corporations and power concentration, the third wave economy is characterized by new organization forms, mostly service organizations (Bhimani, 2003).

During the industrial era the major focus was on production, consequently traditional control tools targeting process optimization and output maximization were adequate. In the typical organization of the industrial era, employees were appreciated based on their compliance with the organization's system and its goals, and the locus of knowledge is the organization itself. In this context the objectives of management control tools is to maintain result control and behavior control.

In the information age, as production activities are often outsourced, knowledge and information have become the primary core competences, thus requiring an upgrade of the management tools. In these new type of firms knowledge is held by the people within the organization (Bhimani, 2003) and the fundamental goal of the organization is to utilize this knowledge in order to create value (Løwendahl et al., 2001; Ditillo, 2004). Therefore behavior control dominance is not appropriate, the nature of the work entails self-organization (Alvesson and Sveningsson, 2008) moreover the new type of organization shall be self-organizing (Bhimani, 2003). In order to overcome the eventual inconsistency within the management control system due to this paradigm shift, it has to take on a dual role and incorporate both control and flexibility (Bhimani, 2003), the traditional management tools therefore have to be complemented by more flexible ones that can capture the aspects of knowledge management.

Even though traditional control tools are still present in the new organizations, the difficulty to apply them has resulted in an excessive attention towards cultural and clan control (Ouchi, 1979) and neglecting bureaucratic or cybernetic control forms (Alvesson and Sveningsson, 2008). Bhimani (2003) argues that firms with no control systems as well as firms employing merely financial controls fail and a holistic approach is needed. Indeed New Economy Firms (NEF) and Knowledge-intensive firms (KIF) usually apply a scheme of bureaucratic and cultural components (Alvesson and Sveningsson, 2008).

### 1.1.2 Managing Growing Business

Taylor and Taylor (2014) provide an extensive literature review on the most relevant recurring characteristics of small and medium enterprises relative to larger companies. In respect of management controls these are entrepreneur-owner centralized decision making and low level of structure in the organizational processes. The latter can bring about less formal communication between managers and employees, leading to less bureaucratic management systems and informal ways of control. In small and medium-sized enterprises there is typically little time for non-operational activities associated with general resource limitations. The above mentioned factors generate an obscure practice of management controls. In order to facilitate and manage growth, it is essential that management controls and organizational processes will be implemented carefully.

## 1.2 Problem

There has been an emergence of the knowledge-based theory of the firm, where knowledge and the ability to create and utilize this knowledge is the firm's major source of competitive advantage (Ditillo, 2004). However management control research has primarily focused on manufacturing design, and other tasks and the uncertainty that can arise from them has been ignored in previous research. The beginnings of research in knowledge-intensive organizations has focused on the research and development unit, and not the entire organization (Ditillo, 2004). Ditillo (2012) notes an increase in literature in the field of the control of knowledge-intensive firms (KIF), though continues to state that knowledge of control systems in these firms is still limited (Ditillo, 2012). Much of the current research has focused only on cultural controls (Kärreman, Sveningsson and Alvesson, 2003; Ditillo, 2012), and has paid little attention to a complete control package for KIFs.

Research has also focused on management controls along the life-cycle of a new economy firm (Granlund and Taipaleenmäki, 2005), but there is little literature regarding other contingency factors. Granlund and Taipaleenmäki (2005) argue that new economy or knowledge-intensive firms are in a continuous growth phase where they constantly fine-tune the organization during the birth and growth phases. New economy firms share many of the characteristics of knowledge-intensive firms, but are primarily in the information technology, biotech and life science sectors. For this reason, it can be important to look beyond the life-cycle approach when studying why KIFs choose certain control tools. Other research on knowledge intensive firms have only focused on large, multinational companies in later stages of the life-cycle (Kärreman, Sveningsson and Alvesson, 2003; Ditillo, 2012, Løwendahl et al., 2001), with little focus on companies in earlier stages. Companies in birth and growth phases of the life-cycle, tend to be smaller, which then makes company size a contingent factor for management control, and usually will adopt different systems and tools than large companies (Hutzschenreuter, 2009).

The above discussion indicates that there is a research gap in the area of management control in relation to growth in knowledge-intensive firms. From a theoretical view, it can be valuable to study the management control systems in relation to knowledge intensity and growth in order to gain a better understanding of what controls are used, and how they are used, and how they change and evolve as a company grows. By examining the control systems of knowledge-intensive companies a greater



understanding of how these tools can be used to contribute to the growth and success of the companies can be gained.

### 1.3 Purpose

This thesis will examine how knowledge intensity and growth in an organization impact the management control system package.

### 1.4 Research Question

In consideration of the purpose of this thesis, the research question is as follows:

- How is the evolution of the MCS package influenced by knowledge-intensity and growth?

### 1.5 Scope and Limitations

In order to address the research question the scope of this thesis is knowledge-intensive firms, in the birth or growth phase of their life-cycle. Specifically, IT companies in Sweden. This research is based on three case studies of companies varying in size and life-cycle phase, discussing the observed management control systems and their relation to knowledge and growth.

#### 1.5.1 Knowledge-intensive Firms

Synthesizing the characteristics described in the available definitions of knowledge-intensive firms, it can be concluded that a knowledge-intensive firm is using the knowledge of its individuals (Ditillo, 2004) in order to deliver products or services, as well as create new knowledge (Kärreman, Sveningsson and Alvesson, 2003). It is important to mention that although there are certain similarities to professional service firms, the specific factors of a profession such as linkage to scientific developments, knowledge workers with typically a standardized educational background or professional norms of conduct (Løwendahl et al., 2001), knowledge-intensive firms is broader category (Ditillo, 2004).

#### 1.5.2 Growth and Life-cycle

The Oxford Dictionary defines growth as a process of increasing in size, in amount, value or importance, in economic activity or value. Lessard et al. (1998 in Canals, 2000) defines growth as a synonym of creativity, as new ideas and new ways of doing things and rearranging existing knowledge. Related to the life-cycle perspective, growth can be defined as proceeding in the life-cycle from one phase to the next. Growth does not only involve quantitative change, Small and Medium Enterprises (SMEs) and large firms are distinguished not merely by size, but the presence of certain organizational processes and structures, management controls including supporting information and measurement systems (Taylor and Taylor, 2014), it is intended in this thesis to capture this transition.

### 1.5.3 Limitations

This thesis aims to analyze the use of management controls in knowledge-intensive firms from a life-cycle and growth perspective. During the research certain limitations were experienced. The literature is limited to the specific studies selected and discussed in the literature review, as the most relevant approaches. Therefore certain aspects may remain neglected. Only three companies are selected for the case study, which provides a non-representative sample and thus a limited availability and quality of data. Since the research will focus on management control systems in relation to knowledge intensity and life-cycle, no other measures are taken into consideration.

### 1.6 Structure of the Thesis

#### *Chapter 2 - Research Design*

In this chapter the research method will be specified, followed by the description of data collection and data analysis methods. Finally, the predicaments of reliability and validity will be discussed.

#### *Chapter 3 - Theoretical Framework*

This chapter will contain literature review on management control systems, knowledge-intensive firms and growth life-cycle theories, as well as a theoretical framework will be presented.

#### *Chapter 4 - Empirical Findings*

Initially, general information regarding the IT industry in Sweden is presented to provide context for the empirical findings. The data from the questionnaires and interviews is presented in order of company size and arranged according to the Malmi and Brown (2008) model.

#### *Chapter 5 - Discussion*

The proposition based on the literature review will be tested against the empirical data collected through the questionnaires and interviews, using a deductive approach.

#### *Chapter 6 - Conclusions*

This chapter will summarize the major findings of the thesis to provide a clearer understanding to the reader. Limitations to the research are also discussed and suggestions are made for future research.

## 2. Research Design

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*In this chapter the research method will be specified, followed by the description of data collection and data analysis methods. Finally, the predicaments of reliability and validity will be discussed.*

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### 2.1 Research Methods

The research strategy used in this thesis is the case study. Case studies are a preferred way to investigate contemporary phenomena and thus provide insight on when, how and why certain events occur. Furthermore case studies allow researchers to collect data that may not be available through other research methods and provide a richer information background. Even though case studies do not serve as a relevant basis for scientific generalization, it is a good way to make observations that can lead the researcher to valuable theories, which shall be the subject of further research. (Yin, 2003)

The method of reasoning in this thesis will be a deductive approach. The deductive approach is a top down approach where hypotheses are developed from a broader set of research and more specific data is sought in order to prove or disprove the hypotheses or propositions. In this thesis, one proposition emerged from the literature review that will be tested against the empirical data.

### 2.2 Data Collection

#### 2.2.1 Literature Review

A review of existing literature in the fields of management control systems and theory, management control in knowledge-intensive firms and small and medium enterprises as well as growth and life-cycle theories will be reviewed and discussed. This literature review will be used to develop the theoretical framework of the thesis.

#### 2.2.2. Company Selection

Companies within the IT-sector were chosen as these types of companies fit the definition of knowledge-intensive firms. The knowledge held by the qualified employees of the companies is used to create value by either creating solutions for customers in a consulting setting, or by developing generalized solutions or products for sale. Additionally, the IT industry in Sweden is rapidly growing employing around 192 000 people and with a turnover of 643 billion Swedish kronor (almega.se, 2013), making it a relevant industry to study. The three companies chosen for the case study all operate in the IT industry in Sweden, and are varied in regards to company size and age. They were chosen deliberately to have at least one company in each phase of growth. Due to time constraints, three companies is viewed as the most manageable. The smallest company studied is an IT company based in Stockholm, founded in 2013 with 8 employees. This micro-entity can be considered to be still in a birth to early growth phase. The second company selected is an IT consulting company founded in 2002 with 64 employees and in a phase of rapid growth, and finally the largest company selected for the case study is an IT consulting company founded in 2001

with 170 employees, and is still in a growth phase. This selection of companies was deliberate as it will allow for a greater comparison of how management controls tools are developed and used at various stages of a company's growth through the birth and growth phases.

### 2.2.3 Questionnaires

Initial data from the case companies was gathered via a questionnaire (Appendix 1) sent via email. This questionnaire asked basic questions regarding the company itself, and the use of management control tools within the company. Respondents were asked to identify what control tools are used, when they were implemented and how they are used. The questionnaire was formatted using the same categories as the Malmi and Brown (2008) control package framework; cultural controls, planning, cybernetic controls, reward and compensation, and administrative controls. The data collected will be used to analyze what control tools are being used and from which areas of the control package framework. A second questionnaire (Appendix 2) was sent after the interviews with further questions that arose during the analysis.

### 2.2.4 Interview

In addition to the questionnaires, semi-structured interviews were conducted with each company. The questions were tailored to each company based on the answers provided on the first questionnaire. During the interviews, questions regarding the company's growth and how the tools are used to foster growth were asked. The results from the interview provide the data to give answers to how and why the specific tools are chosen and used, and how they contribute to the company's growth.

## 2.3 Data Analysis

For case study analysis, the most widely-used technique is pattern matching during which an empirically based pattern will be compared to theoretically predicted patterns (Yin, 2003). This thesis will use pattern matching in order to compare the collected data to the proposition. Explanation building, a type of pattern matching, is applied to build an explanation about the case (Yin, 2003). Explanation building is used in this thesis to explain the patterns found in the empirical data. Finally cross case synthesis is used to compare and aggregate the findings from the three cases.

## 2.4 Reliability and Validity

In order to represent a coherent and logically solid argumentation based on a consistent interpretation of the research outcomes, it is of prime importance to maintain reliability and validity of data.

Reliability is to demonstrate that if the same case study were carried out according to the same procedures, it would result in the same conclusions. To ensure reliability the technique of triangulation is used where data is collected from various sources such as questionnaires, interviews and company websites (Yin, 2003).

The concept of validity has three aspects that need to be considered. To address construct validity it is important to implement equitable measures for the fundamental concepts, which will be grounded in the

relevant literature as well as the key resource persons will be contacted for review in a later phase of the research. Ensuring internal validity can be particularly difficult as the case study involves inference by nature and as such, thus possibly distorting the findings. In order to avoid the latter, the analytic technique used will be explanation-building. External validity is strengthened by a multiple case study, however there are built-in limitations since case studies are rather context specific. (Yin, 2003).

## 3. Theoretical Framework

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*This chapter will contain literature review on management control systems, knowledge-intensive firms and growth life-cycle theories, as well as a theoretical framework will be presented.*

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### 3.1 Literature Review

#### 3.1.1 Research on Management Control Systems

There are numerous approaches one can take when examining management control in a company. Each approach, each typology determines different aspects to be considered. This thesis will proceed along the model developed by Malmi and Brown (2008), therefore the primary premises will be corresponding to the features of this model. The basic foundations of the approach presented by Malmi and Brown (2008) are specifying the management control system by distinguishing between the function of decision-making support and of monitoring goal congruence and behavior. They argue that any information-based system only becomes a management control system if mechanisms that target monitoring and directing employee behavior are present (Malmi and Brown, 2008). Furthermore Malmi and Brown suggest to replace the concept of organizational controls with that of management controls, claiming that the latter is a more specific category being directed particularly at employee behavior. The literature review will be carried in accordance with the major courses of the study by Malmi and Brown.

One of the earliest definitions of management control is Anthony's as "the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's goals" (1965 cited in Otley and Berry, 1980 p. 235), as well as separating management control from strategic planning and operational control (Otley and Berry, 1980). Nevertheless Malmi and Brown (2008) describe it as an essential difference from their model, as Anthony's approach lacks the strategic and operational controls as means to influence employee behavior. On the other hand Otley and Berry (1980) argue that the above conceptualization leaves the supervision of actions to operational control, which in turn is the fundamental idea in Malmi and Brown's model.

Otley and Berry (1980) discuss the topic more from the viewpoint of organizational theory defining control as a process to help the organization to adapt to its environment and pursue its goals. The primary focus is on the organization and how the accounting information and the control procedures should be aligned with the organization in which they function. Yet it is remarkable that Otley and Berry (1980) write of accounting control, thus referring to the information carrier objective. Even though Otley (1980) adopts the idea of organizational control package, the framework he provides is admittedly a fairly simple one and particularly based on contingency theory. The most influential frameworks in this field, also discussed by Malmi and Brown are Ouchi's conceptual framework (1979), Merchant's object-of-control framework (1982; Merchant and Van der Stede, 2007) and Simons' (1995) levers of control.

Ouchi (1979) represents the popular idea of the time of people striving to maximize their own benefit, therefore the aim of controls is to counteract opportunistic behavior in order to guarantee that the

organization “moves towards its objectives” (Ouchi, 1979 p.833). Ouchi’s (1979) framework comprises market mechanisms, bureaucratic mechanisms and clan mechanisms, which usually co-exist in an organization, so the major task when designing the control mechanisms is to evaluate the characteristics of each division, so that the appropriate form of control can be emphasized.

The evaluation is done along two factors, which are the major determinants of each mechanism: social and informational requirements. The two effective ways of people control are either to select future employees who fit the organization or implement a managerial system to monitor employees. Ouchi (1979) focuses more on the contextual aspects, which the different mechanisms’ applicability is contingent on and thus does not provide specific tools regarding the mechanisms. The most conspicuous correspondence between the control mechanisms by Ouchi (1979) and the package introduced by Malmi and Brown (2008) is clan control being a component in cultural controls.

Simons (1995) defines management control systems as “the formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities” (Simons, 1995, p.5). The role of information is rather definitive, as a means to alter organizational activity patterns in order to implement the organization’s strategy, and thus become a control system. This approach is analogous to the argumentation of Malmi and Brown (2008), nevertheless conveying a narrower frame of reference focusing on information-based routines (Malmi and Brown, 2008). The center of Simons’ model is business strategy and according to Simons (1995), strategy can be implemented by bringing it into alignment with human behavior and the organization, which are according to Simons’ (1995) concept instruments to achieve specific goals.

There is a strong connection of this concept to that of Malmi and Brown (2008), who emphasize the control function, as well as certain components in their model were adopted from Simons, such as value-based controls (beliefs systems) in cultural control (Malmi and Brown, 2008). Even though less explicitly, other components in the Malmi and Brown (2008) MCS package can also be linked to Simons’ (1995) framework, for instance the different formal elements of boundary systems can be traced, mostly in form of policies and procedures among the Administrative Controls. Diagnostic control systems as a means of setting goals and monitoring performance are exemplified by business plans and budgets (Simons, 1994) and as such can be associated with the Planning and Cybernetic controls modules in the MCS package.

Merchant and Van der Stede (2007) describe two different functions of control systems: strategic control as the manager’s way to scrutinize the validity of the company’s strategy, and in this sense it is closer to the decision-making support function analyzed by Malmi and Brown (2008), as well as the focus of strategic control is primarily external to the organization. The second function of control systems is management control targeting to influence employee behavior in alignment with the management’s expectations; consequently management control has an internal focus.

Malmi and Brown (2008) compare their model to Merchant’s framework, originally created in 1982, although the “Object of Control” framework has a different structure, dividing control into actions, results and personnel controls (Merchant, 1982). Action controls consist particularly of administrative control, for instance of policies and procedures, codes of conduct and administrative behavioral constraints. These

controls only constitute a part of Malmi and Brown’s typology: Policies and Procedures (2008), while other forms of control, like budget reviews shall be classified in different segments of the MCS package. Merchant and Van der Stede (2007) argue that most organizations implement financial results control systems to control employee behavior, which more or less is the same as the middle module in the Malmi and Brown package, although with alterations. Merchant and Van der Stede (2007) consider planning and budgeting as one system, used particularly for setting targets and evaluating performance, in which sense it bears great resemblance with the Malmi and Brown (2008) model. However, Malmi and Brown (2008) argue that finance has little relevance regarding planning, as well as it is treated as a separate system due to its significant role in directing employee behavior. Incentive compensation systems as a separate part in the financial results control system (Merchant and Van der Stede, 2007) can be regarded as the equivalent of Malmi and Brown’s Reward and Compensation (2008), especially since here the concept is extended to non-financial features as well. Personnel controls depicted by Merchant and Van der Stede (2007) significantly differ from the cultural controls proposed by Malmi and Brown (2008), several aspects are reclassified to administrative controls (training, job design) or cultural controls (selection, training). Cultural controls as described by Merchant and Van der Stede (2007) are largely limited to values and norms.

The explicit goal of Malmi and Brown (2008) was to develop an analytical synthesis of the existing research on management control systems and merge the different elements based on different views. According to their definition, “systems, rules, practices, values and other activities management put in place in order to direct employee behavior should be called management controls. If these are complete systems, as opposed to a simple rule.” (Malmi and Brown, 2008 p.290)

	<b>Ouchi (1979)</b>	<b>Merchant (1982)</b>	<b>Simons (1995)</b>	<b>Alvesson &amp; Kärreman (2004)</b>	<b>Malmi &amp; Brown (2008)</b>
Focus	People, Information, Behavior	Behavior, Results	Change management strategy, Org.activity patterns	“worker behavior, output and/or the minds of the employees”	“systems, rules, practices, values and other activities”
MCS function	Limit opportunistic behavior, Goal congruence	Prevent undesirable behavior	Implement strategy	“secure sufficient resources, and mobilize and orchestrate individual and collective action towards (more or less) given ends”	Direct employee behavior
Forms of control	Bureaucratic Market Clan mechanisms	Action, Results, Personnel control	4 types of systems: beliefs, boundary, diagnostic, interactive	Technocratic and Socio-ideological control	Cultural; Cybernetic; Planning; Reward and Compensation and Administrative
MCS structure	No system contingent factors determine which control is used	Object of Control framework	All systems relate to strategy, but not each other	Two forms reinforce each other	MCS package

*Table 1 Comparison of existing management control systems*



### 3.1.2. Studies on Management Control in Knowledge-intensive Firms

#### *Definition of knowledge intensive firm*

The literature suggests that there is difficulty in defining what a knowledge intensive firm is stating that all companies require knowledge, so it is difficult to define a true knowledge company (Kärreman, Sveningsson and Alvesson, 2002; and Ditillo, 2004). Kärreman, Sveningsson and Alvesson (2002) identify the following characteristics that are common to knowledge intensive firms: highly qualified staff with professional backgrounds; products and services are complex and/or non-standard; and product, market and personnel development are significant activities within the organization. Davenport (2008 in Jääskeläinen and Laihonen 2013) defines knowledge workers as having high degrees of expertise, education or experience with the primary purpose of their job involves the creation, distribution or application of knowledge. Løwendahl et al. (2001) define professional service firms by the following characteristics: highly educated employees; professional assessment and high degree of personal judgment by the experts; professionals often legally responsible for potential liability claims: customized services; high degree of interaction with the client representatives; professionals typically trained in standardized body of knowledge and often certified by the relevant authority; and professional norms of conduct.

While there is difficulty in identifying a true knowledge-intensive firm, there is agreement in the literature regarding shared characteristics of knowledge intensive firms. These characteristics are: highly qualified staff, complex and often customized products and/or services; and significant focus on market and personnel development (Kärreman, Sveningsson and Alvesson, 2002; Ditillo, 2004; Løwendahl et al., 2001). It is also significant to note that in knowledge intensive firms, the use of knowledge is the major source of competitive advantage (Ditillo, 2004). For the purpose of this thesis, knowledge-intensive firms are defined as companies that have highly qualified employees, offer complex and/or customized products or services, where personnel and market development are key activities in the organization, and the knowledge possessed by the company is their competitive advantage.

#### *Review of management control in Knowledge-intensive Firms*

Alvesson and Kärreman (2004) and Ditillo (2004) discuss the tendency of previous research on management control in KIFs to focus on only the cultural or clan types of control. Ditillo (2004) also points out that the existing research suggests that management of KIF should focus on attracting and keeping the knowledgeable workplace as well as the informal controls such as culture. Alvesson and Kärreman (2004) indicate the importance of understanding the various types of controls and how they relate to each other.

Recent research has started to focus on other areas of control in KIF. The studies by Kärreman, Sveningsson and Alvesson (2002), Ditillo (2012) and Jääskeläinen and Laihonen (2013) will be discussed in this section. Kärreman, Sveningsson and Alvesson (2002) challenge existing literature that view KIF as a departure from bureaucratic controls, emphasizing only cultural or clan controls. Features of KIF differ from the characteristics of bureaucratic controls, and therefore it is argued that bureaucratic controls will not be used in KIFs. They also suggest that societal organizational trends can make bureaucratic controls

less relevant due to such trends as entrepreneurial organizations, continuous knowledge development of workers and organizational learning. The two companies in the case study actually exhibited a number of bureaucratic controls. From these findings, it is suggested that the inherent ambiguity of KIF can actually foster bureaucracy rather than rule it out and that there can be cultural and symbolic significance in the bureaucratic controls that are used (Kärreman, Sveningsson and Alvesson, 2002).

Ditillo (2004) describes knowledge complexity and integration and identifies three different types of knowledge complexity which he suggests require different controls and different knowledge integration. Firstly, component complexity is “determined by the number of distinct information cues that must be processed and the number of distinct acts that must be executed to complete the task” (Ditillo, 2004 p. 409). Component complexity requires documents and codification to integrate knowledge, and it is suggested that action controls are best suited for these tasks. Secondly, coordinative complexity “is the result of the form and strength of the relationships between information cues and acts, including the content, timing, frequency and location requirements for performances of demanded acts” (Ditillo, 2004 p. 409). Technical complexity relates to outputs and performance reports for knowledge integration and result controls are suggested. Thirdly dynamic complexity “relates to the need to adapt to changes occurring in the cause-effect relationships, or means-end chain during the execution of the task” (Ditillo, 2004 p. 409) Dynamic complexity is best integrated through informal, face to face communication and competencies, values and beliefs or clan controls are best suited. This suggests a contingency approach to management control in a KIF where knowledge complexity is a driving force of the management control system. Management control systems play a double role in KIFs, they can be used to coordinate activities as well as foster knowledge integration (Ditillo, 2004).

Ditillo (2012) continues the research in knowledge companies identifying four types of knowledge and the associated controls most suited in order to effectively transfer knowledge. Different management control mechanisms activate differing relations between individuals and are suitable for transferring different types of knowledge. The different relationships are defined as weak/strong and direct/indirect. Firstly, process-related knowledge refers to the means and behaviors by which organizational objectives are pursued. The associated relationships are weak and indirect and are most suited to action controls. Secondly, outcome-related knowledge refers to the organizationally desired results based on the assumed understandings of the links between activities and units. This type of knowledge results in indirect relationships with strong ties and is most suited to results control. Thirdly, technology-related knowledge is the product specific technical knowledge and expertise in embedding specific solutions. This is associated with direct relationships with strong ties and is most suited to personnel control. Finally opportunities-related knowledge relates to the information about the existence of expertise residing in other areas of the organization associated with direct relationships with weak ties and is most suited to action controls (Ditillo, 2012). This study complements the conclusions of Ditillo (2004) by providing arguments to explain why management controls are effective in not only integrating knowledge in projects but also transferring knowledge between projects (Ditillo, 2012).

Løwendahl et al. (2001), describe knowledge from the point of view of the organization distinguishing individual and collective knowledge. The three levels of knowledge relate to the processes within the company and how knowledge is transferred. Based on the types and level of knowledge existing in a

company, Løwendahl et al. (2001) describe two strategies a company can adopt in regards to value creation and service delivery. Firstly, reuse economics refers to a standardized product, where the firm offers a similar product or service to customers based on a single area of expertise and a specific process. Secondly expert economics offers highly customized products and services to customers based on different areas of expertise with less reliance on specific processes. The strategy chosen by a company can impact the organizational structure and administrative processes of the company, as different structures are more suited to reuse versus expert economics (Løwendahl et al., 2001).

Jääskeläinen and Laihonen (2013) study performance measurement in KIF with focus on the individual knowledge worker, the customer and the organization as a whole. They identify specific aspects in measurement and management of knowledge intensive organizations: the performance and well-being of individual knowledge workers and the ability to provide value for the customer. KIFs are widely perceived as “people organizations” where the success relies on qualified staff and expertise. These creativity based organizations require flexible control mechanisms and individual performance goals. A key distinctive feature of KIF is the high significance of human capital and the performance measurement needs to take this into consideration. A challenge to measuring individual worker performance is the ability to capture the performance of constantly changing work. A suggested solution is to capture a subjective measure of performance that can include peer reviews and self-reviews. Task performance or contextual performance can also be measured. Customer perceived performance is also important when measuring organizational performance. Customer perceived performance can be measured by component by component measurement or by customer target-oriented measurements. The case study found that a traditional balanced performance measurement approach does not substantially differ in knowledge-intensive organizations (Jääskeläinen and Laihonen, 2013). This suggests that although KIF may have unique features or challenges, many traditional measures and controls can be still be used successfully. In relation to reward and compensation programs, Markova and Ford (2010) find that knowledge workers are intrinsically motivated and less motivated by monetary rewards. The study further found that non-monetary rewards were more successful in creating the desired results and innovation than monetary rewards (Markova and Ford, 2011).

### 3.1.3 Studies on Growth and evolution

Management control in KIFs can be studied from a life-cycle perspective, based on existing research by Granlund and Taipaleenmäki (2005). This study focused on management control in new economy firms on a life-cycle perspective. Features of a NEF are very similar to KIF, but also include fast growth and typically limited to IT or biotech industries (Granlund and Taipaleenmäki, 2005). Moores and Yuen (2001) study management control on a life-cycle perspective using the model by Miller and Friesen (1984 as cited in Moores and Yuen, 2001). According to this model a firm will go through the following stages during its life-cycle: birth; growth; maturity; revival and decline. Granlund and Taipaleenmäki (2005) argue that this model is not appropriate for NEF as it can be argued that NEFs are in a perpetual birth and growth phase. The model by Victor and Boynton (1998 as cited in Granlund and Taipaleenmäki, 2005) along with a venture capital life-cycle model are adopted instead. Victor and Boynton (1998 as cited in Granlund and Taipaleenmäki, 2005) identifies the following life-cycle phases: craft work; mass production; process enhancement; mass customization; and co-configuration and renewal. Venture capital firms can go

through the following stages: seed capital; start-up financing; first stage financing; expansion; bridge financing and spin-off. The study found that companies in especially later stages of venture capital life-cycle could simultaneously exist in several phases leading to life-cycle ambiguity in NEFs (Granlund and Taipaleenmäki, 2005).

Growth and size of company are also important contingent factors that can be related to life-cycle of KIFs. Growth in an organization is important for both internal and external reasons. Internal reasons are to recruit and retain talent and to break a mature industry mindset. External reasons include, attracting capital, positioning in capital markets, and to manage substitution risk. (Canals, 2001). Canals (2001) identifies the following strategies for growth: corporate renewal driven decisions; innovation driven decisions; capabilities driven decisions; and market responsive decisions. The strategies are placed on a matrix related to resources and capabilities and market and customer. Managers need to consider growth from a dual perspective looking at both the internal and external factors (Canals, 2001). Companies follow different growth pathways, so it is not relevant to find a specific growth pattern (Canals, 2001)

Yang et al. (2011) study the link between knowledge management and corporate growth in high technology firms. Knowledge and knowledge management are the unique resources and competitive advantage in high-tech companies. In these environments, growth accelerates through innovation and the identification of external opportunities. Yang et al. find there is a positive relationship between knowledge management process competence and growth performance. Related to this relationship, the following additional factors have a positive effect: project manager skill, shared visions and rewards systems (Yang et al. 2011). These findings can suggest that management control in KIF can play a significant role in corporate growth.

With 89% of companies in the IT and telecom industry in Sweden having 10 or fewer employees (istatistik.se), the size of KIF is another important factor to consider in relation to growth. Taylor and Taylor (2014) identify the following features of a small and medium enterprise that differentiate them from large companies: flexibility and an ability to react quickly; organizational processes which are not very structured; decision processes typically concentrated in the entrepreneur-owner; a focus on technical and production aspects; learning processes based on learning by doing; and a lack of time for non-operational activities. These differences lead to less bureaucratic management systems which mitigate the need for formal procedures and controls. Other factors that influence performance management systems include corporate governance structure, information systems practices, business model and management style.

## 3.2 Theoretical Framework

### 3.2.1 Contingency Theory

Contingency theory seeks patterns between the actual internal and external conditions, which are the contingent factors and the optimal control system design. (Nilsson, Olve and Parment, 2011; Sandelin, 2008) In the reviewed literature there are certain recurring factors that are supposed to determine the implemented controls. Based on the contingency approach, there should be a distinction between independent and dependent variables (Chenhall, 2003). Ouchi (1979), Merchant (1982) and Ditillo (2012)

consider knowledge and the complexity of knowledge based processes as one of the most prevalent premises in relation to optimal controls. Granlund and Taipaleenmäki (2005) argue that fast growth typical for knowledge intensive industries impacts the management control practices, whilst Taylor and Taylor (2014) consider size as a contingency factor. Both knowledge and growth shall be regarded as independent variables in this thesis and the elements of the MCS shall be regarded as dependent variables.

In his article Chenhall (2003) discusses contingency-based research in relation to management control systems, identifying several contextual variables including technology, strategy and size. These three variables will be discussed in relation to the independent variables of knowledge and growth. Regarding technology Chenhall (2003) proposes that standardized work processes lead to more formal controls and task uncertainty and a high level of interdependence lead to more informal controls and less reliance on procedures. Ouchi (1979), Merchant (1982) and Ditillo (2012) describe a similar concept related to process complexity, uncertainty and relatedness in their matrixes. They all suggest that the more complex the processes and the higher the uncertainty, the less formal and the more individual focused the controls are.

The combination of size and strategy defines growth. The strategy of a company can be designed to support growth, and as the size of the company increases so does the quantity of information generating a need for formal controls such as rules, processes and extended structures (Chenhall, 2003). Change in the generally agreed measures of the size of a company, like employee number, annual turnover and total assets can define formal growth, however particularly in knowledge intensive firms a special type of growth should be considered as in learning and finding new ways to do things and introducing new products. The combination of any of these four elements can be regarded as growth.

This thesis will apply the Malmi and Brown MCS package model (2008) within the context of contingency theory, regarding knowledge relatedness and growth as the primary contingency factors. Malmi and Brown's (2008) MSC control package is chosen as the framework as it provides a comprehensive management control package.

### 3.2.2 Malmi and Brown Management Control Package

<b>Cultural Controls</b>						
Clans		Values			Symbols	
<b>Planning</b>		<b>Cybernetic Controls</b>				<b>Reward and Compensation</b>
Long range planning	Action planning	Budgets	Financial Measurement Systems	Non Financial Measurement Systems	Hybrid Measurement Systems	
<b>Administrative Controls</b>						
Governance Structure		Organisation Structure			Policies and Procedures	

Figure 1 Malmi and Brown (2008) Management Control Package

Organizational culture is defined as “the set of values, beliefs and social norms which tend to be shared by its members and, in turn, influence their thoughts and actions” (Flamholtz et al., 1985 p. 158 as cited in Malmi and Brown, 2008 p.294). Malmi and Brown (2008) place cultural controls on top of their model as a contextual frame for other controls, arguing that cultural controls are broad, yet subtle controls that change slowly. Alvesson and Kärreman (2004) describe socio-ideological control as a means to influence employees’ mind-sets and technocratic control which is supposed to directly control employee behavior. They stand for an analogous viewpoint to that of Malmi and Brown, proposing that “structural forms of control are cultural phenomena themselves that have and take on specific meaning depending on cultural contexts” (p.424) as structural forms only exist in the context of culture.

The cultural controls in the Malmi and Brown MCS package (2008) consist of values, symbols and clans. The concept of value controls is based on the “Levers of control” framework developed by Simons (1995) as the basis of belief systems and what managers communicate to be adopted by employees. Organizational values can be endorsed either by recruiting individuals with similar values or the employees are socialized in order to change their values to fit the organization’s values, or the employees abide however they personally do not interiorize these values. Symbols are the visible manifestations of the organizational culture, either as dress codes or the shaping of office space. The final and probably most discussed element of the cultural controls is clans, which concept was established by Ouchi (1979). Clans are groups within a unique organization, characterized by formalized and extended socialization processes, subjecting the members to skill training and value training. Personnel controls presented in Merchant’s “Object of Control” framework (1982) include many similar elements, such as selection and training, shared goals and peer control.

Alvesson and Kärreman (2004) argue that socio-ideological forms of control are misleadingly labelled as informal controls or clan controls. However the nature of relation between knowledge and cultural controls seems to support such an approach. Ouchi (1979), Merchant (1982) and Ditillo (2012) are all in

agreement that the complexity of technical knowledge necessary to carry out work processes on one hand and output measurability on the other determine the applicability of controls. Ouchi (1979) suggests that in case of imperfect knowledge of the transformation process and low ability to measure outputs, clan control is the most appropriate form of control. Merchant (1982) proposes that personnel controls should be implemented if the ability to measure results is low and the knowledge of specific desirable actions is poor. Ditillo's matrix (2012) comprises causal ambiguity as the difficulty level to articulate knowledge and knowledge relatedness. When the causal ambiguity is high, it means that the necessary knowledge can primarily be acquired through experience, therefore it is advantageous to have personal relationships between workers (strong ties). Furthermore if the knowledge relatedness is low, that is shared knowledge between units is diverse, face-to-face interaction (direct relationships) are useful facilitators of transferring knowledge. Ditillo identifies this segment with technology-related knowledge and advises to implement personnel control. Ouchi (1979) suggests that if there is a high level of uncertainty in relation to work processes in the organization and it is not possible to accurately measure performance, clan control is preferable; this way employees shall be rewarded according to their values and motivation. There is a great resemblance among the matrixes created by Ouchi (1979), Merchant (1982) and Ditillo (2012) in this regard.

The middle portion of Malmi and Brown (2008) control package consists of three different systems, planning, cybernetic controls and rewards and compensation. The purpose of the planning system of the control package is to set out the goals of the functional areas of the organization, thereby directing employee effort and behavior (Malmi and Brown, 2008). Planning also provides the standards to be achieved in relation to the goals and clarifies expected behavior and effort. It also enables coordination by aligning a set of goals across the organization. There are two types of planning: action planning which is planning for the immediate future, usually and 12 month period; and long range planning which sets goals for the medium and long run and has a more strategic focus (Malmi and Brown, 2008).

Malmi and Brown (2008) identify five characteristics of cybernetic controls: measures that enable quantification of an underlying phenomenon, activity or system; standards of performance or targets to be met; feedback process that enables comparison of outcome to a standard; variance analysis; and the ability to modify the system's behavior or underlying activities. There are four systems within cybernetic controls: budgets; financial measures, non-financial measures, and hybrid measures such as a balanced scorecard (Malmi and Brown, 2008). The purpose with rewards and compensation controls is to direct employee behavior through attaching rewards to control effort direction, effort duration and effort intensity (Malmi and Brown, 2008)

Results controls as identified by Merchant (1982) are similar to cybernetic controls, but do not encompass planning or rewards and compensation. Results controls consist of results accountability which includes standards, budgets and measurement by objective. The purpose of results control is to hold employees accountable for certain results and can be achieved through action/accountability systems (Merchant, 1982). Merchant (1982) and Ouchi (1979), both place result controls or output measures on a matrix suitable for situations where there is a high ability to measure results and where knowledge of the desired outcome can be high or low. Ditillo (2012) identifies outcome-related knowledge as consisting of the organizationally desirable objectives based on the understandings of the links between the activities of

the organizational units necessary to achieve the objectives. This type of knowledge is most suited to results controls such as goal setting and performance measurement.

Malmi and Brown (2008), Merchant (1982) and Ouchi (1979) are all in agreement that this subset of controls involve actions that have a measurable outcome, and these measures can be used to control behavior in order to achieve the desired result. Merchant does not include planning or rewards and compensation in his definition of results controls. Ditillo (2012) also relates results controls as controlling actions with a measurable outcome and relates them as being suitable for output-related knowledge.

Malmi and Brown (2008) include 3 different systems under administrative controls; organization design and structure; governance and policies and procedures. The three systems work together to direct employee behavior through organization and the monitoring of behavior and who employees are accountable to through the process of specifying how tasks or behaviors are to be performed or not performed. Organizational design and structure is an important control device as a particular structure can encourage certain types of contact and relationships. Governance includes board structure, management and project teams. Policies and procedures are a bureaucratic approach to specifying the processes and behavior within an organization.

Merchant (1982) defines action controls into three sub-categories: behavioral constraints; action accountability and preaction review. Action accountability includes work rules, policies and procedures and codes of contact, most fitting with the Malmi and Brown (2008) framework. Ditillo (2012) applies action controls in the form of procedures and operating manuals, accountabilities and evaluation procedures to process-related knowledge and opportunities related knowledge. All models describe administrative and bureaucratic controls as the structure and policies, procedures and processes designed to specify the desired behavior of employees, and it is mostly the details of what types of controls that varies.

### 3.2.3 The Purpose of Management Controls

According to the traditional view in management control studies the aim of management controls is to monitor and direct employee behavior (Malmi and Brown, 2008) in order to meet the organization's goals. Anthony discusses "the accomplishment of the organization's goals" (1965 cited in Otley and Berry, 1980 p. 235), Otley and Berry (1980) describe the environmental adaptation of the organization to be able to realize its goals and Ouchi (1979) writes about "mechanisms through which an organization can be managed so that it moves towards its objectives" (p. 833); Simons (1995) discusses altering the organizational activity patterns, while Merchant and Van der Stede (2007) define aim management control as aligning employee behavior with management expectations.

The emphasis here is on the organization's goals being the ultimate target of management controls. In opposition to the above Ditillo (2004) proposes that management control systems in knowledge intensive firms gain the additional role of consolidating different knowledge sources and thus impact activities.

By the nature of the characteristics of a knowledge intensive firm, there is a strict selection and screening process as employees require a high level of training and education in order to carry out their tasks. By



applying Ouchi's (1979) framework, it can be argued that employees of KIFs already have individual goals that are congruent with the organization's goals, and that clan or culture controls are the most appropriate control method. It is highly relevant to inquire what the organizational goals are in knowledge intensive firms.

While goal congruence is still the main underlying purpose of management control, the existence of knowledge in KIF brings about other elements needing control such as the knowledge itself and the transfer of that knowledge within the organization. Ditillo (2012) identifies four types of knowledge and the controls appropriate for controlling them. Goal congruence can be obtained through the use of cultural controls in KIFs, but other controls can be necessary to control knowledge and the use of knowledge in an organization and to offset uncertainty in the organization. For this reason, goal congruence cannot be the only purpose for management control in a KIF, making a control package framework (Malmi and Brown, 2008) the most relevant model for studying management control in KIFs

### 3.2.4 Knowledge as an Organizing Force

Knowledge and knowledge management are the source of competitive advantages (Yang et al., 2011), however it is difficult to measure knowledge work performance due to many intangible performance drivers and complex and intangible nature of outputs (Jääskeläinen and Laihonon, 2013).

With moving away from the industrial era the direct result and behavior controls needed to be replaced by more flexible systems, that apart from communicating shared values also implement compatible information and monitoring systems and corresponding incentive systems. The locus of organizational knowledge is the intellectual capital, which incorporates structural capital (technology, processes, databases, policies, procedures), human capital (employees creating knowledge and transforming it into value) and relationship capital (organizational linkages) (Stewart, 1997 as cited in Herremans and Isaac, 2005). The optimal composition of management controls in a knowledge intensive environment shall target all three elements of intellectual capital, as well as facilitate learning in the organization in order to enable the organization to adapt to changes through adaptive learning as well as increase creative capacity through generative learning (Herremans and Isaac, 2005). Herremans and Isaac (2005) suggest in the Criteria of Control Model that four strategic aspects shall be considered when developing a MCS that incorporates adaptive and generative learning in the organization. First, the company must determine its objectives (focus). Second, the organizational objectives must be captured in form of a vision (commitment) and establish shared values, responsibilities and reward systems. Third, the necessary structure, technology, information systems and resources need to be secured to be able to utilize intellectual capital (capability). Finally, an evaluation system, based on results monitoring, needs to be implemented to assess how well the organization is achieving its goals (learning). Interrelatedness is a highly important feature of the above aspects and they only function well if each element is in place (Herremans and Isaac, 2005).

The components of the MCS package presented by Malmi and Brown (2008) can be assigned to the above strategic aspects. Focus can be accommodated by planning, both through long-range planning as in setting objectives and action planning as in evaluating risk and reliability decisions (Herremans and Isaac, 2005).

Commitment comprises both cultural controls, such as values and reward and compensation system. Capability requires structure, technology, information systems and resources, which in turn correspond to the Malmi and Brown package's organization structure, policies and procedures, but also clan control as a frame for knowledge sharing. The learning process provides feed-back on the organization's performance in regards of its goals (Herremans and Isaac, 2005), therefore cybernetic controls are the most appropriate to implement for this aspect.

### 3.2.5 Relation to growth

In their study on the implementation of performance measurement systems Taylor and Taylor (2014) argue that one of the underlying reasons for the higher failure rates in SMEs compared to large firms is lack of focus on growth, characterized by managers not producing business plans and accurate financial forecasts. Canals (2001) suggests that growth is a crucial dimension of corporate strategy and industry leadership is only sustainable through growth. Each of the internal and external factors of growth identified by Canals mutually facilitate and are facilitated by growth, as well as different management controls pertain to them.

The primary internal reasons for growth by Canals (2001), recruiting and retaining talent can be related to knowledge and knowledge management, defined as unique resources by Yang et al.. (2011). Merchant and Van der Stede (2007) discuss selection and training among personnel controls, while Malmi and Brown (2008) include selection among cultural and training in cultural or administrative controls. Furthermore both aspects reflect the relevance of organizational values, as in organizations typically either recruit individuals whose values fit the organization or the employees are socialized and have their values changed (Malmi and Brown, 2008; Alvesson and Kärreman, 2004) or monitored and evaluated through a managerial system (Ouchi, 1979). Out of the external reasons mentioned by Canals (2001) attracting capital is of prime importance. It is closely related to investors decisions based primarily on financial return rates, which correlate with cybernetic controls.

### 3.3 Conclusions from Literature Review

From the literature it can be suggested that increased knowledge and task uncertainty will lead to more informal controls (Ouchi, 1979, Merchant 1982, Ditillo, 2012). Additionally as the company grows, the introduction of more formal controls often becomes necessary (Granlund and Taipaleenmäki, 2004, Chenhall, 2003 and Taylor and Taylor, 2014).

As a result, the following proposition was developed: Knowledge intensity and growth in a company determine the Management Control System.

## 4. Empirical Findings

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*Initially, general information regarding the IT industry in Sweden is presented to provide context for the empirical findings. The data from the questionnaires and interviews is presented in order of company size and arranged according to the Malmi and Brown (2008) model.*

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### 4.1 IT Industry in Sweden

The IT and telecom industry in Sweden can be considered to be a very important industry for Sweden's overall economy. The industry has experienced growth even during a recession period with a 16% increase in revenues and an 8.4% increase in employees from 2008-2012. During that period the number of companies in the industry has also increased dramatically. In 2012 there were 20 684 companies in the IT and telecom industry in Sweden. Of these companies, 17 176 companies are in the software and IT services sector which is a 62% increase from 2008 for this category. The majority of these companies are small with 89% employing 10 or fewer people. However, it is the smaller companies that are growing faster in terms of employee numbers (istatistik.se, 2013). These figures indicate that while the IT industry in Sweden is successful and growing, the competitive environment is very high. With so many companies entering the industry, it is important for companies to not only find and exploit their competitive advantage, but to be able to react quickly to a changing market. How management controls are applied within the company can either aid or hinder its ability to grow and remain competitive.

### 4.2 Knowledge Sharing in the IT Industry

Knowledge management and knowledge sharing are also important to success, not only internally, but externally between companies. Knowledge is essential to innovation and is often sourced externally particularly in the forms of new technology and professional intelligence. Small companies almost exclusively rely on external sources to source knowledge. These sources can be customers, conference attendance, trade shows and trade organizations. Another important source of knowledge sharing in an industry is through informal links and networking where knowledge can be shared in both directions (Huggins et al., 2010). In Southern Sweden, there are several organizations and networks for start-ups to share knowledge. Such organizations include [malmostartups.com](http://malmostartups.com), and [oresundstartups.com](http://oresundstartups.com). These groups allow entrepreneurs to share information with each other but also provide resources such as contact with investors and other advisors.

### 4.3 Company presentation

The three companies selected for the case study were initially sent a questionnaire with questions regarding their current management control systems. After the questionnaires were returned, interviews were conducted with each company and the questions were based on the answers given on the questionnaire. In the data analysis phase, further questions emerged, so follow up emails were exchanged and a second questionnaire was sent. Later during the analysis a connection was found between the

length of the interviews and complexity of the management control system used by the companies. The interview with Company A was much shorter than the other two interviews, however their management control system is not as detailed or as developed as the other companies. The companies wished to remain anonymous so will be referred to as Company A, Company B and Company C.

Company name	Position of person interviewed	Other forms of data collection	Form of interview	Length of interview
Company A	CEO	Questionnaire 1 returned prior to interview Company website Follow-up emails and Questionnaire 2 after interview	Skype	25 minutes
Company B	CEO		In person in company's office	60 minutes
Company C	Financial controller		In person in company's office	70 minutes

*Table 2 Information on data collection and interviews*

#### 4.3.1 Company A

Company A was founded during 2013 by three entrepreneurs with the aim of providing a complete Bitcoin trading platform. The company is privately held and owned by external investors and shareholders. Currently the company has eight employees and the annual turnover for 2013 was 300 kSEK. The underlying concept of the company's activity is radically innovative, as the service provided targets a genuinely new area of the market. Due to the nature of the business and the relatively early phase of the company's development, the personnel includes merely key persons, five out of eight are chief officers. Considering that the company offers its service in a remarkably progressive field, the potential clients are the focus of knowledge sharing in form of blog posts and frequent Twitter posts.

#### 4.3.2 Company B

Company B is a privately owned company, with the three founders as the only owners. The company has been around for twelve years, although in its current form it was only registered in 2012. There are currently 64 employees working in the offices in Stockholm, Gothenburg and Malmö, but the number is rapidly growing. The annual turnover for 2013 was 40 MSEK. The main goal is to provide digital services and products in user experience technology both in form of managing complete procedures or provide support in specific stages. Besides the regional offices, the company's activity comprises a separate department called "Academy" within which open courses for IT professionals are offered.

#### 4.3.3 Company C

Company C is a holding company of a group of eleven companies, with their offices in Malmö, Stockholm, Copenhagen and four other Swedish cities. The company was founded in 2000 and has been steadily growing since. In 2012 the group had 147 employees and an annual turnover of 122 MSEK. The group is privately owned by the employees and the ownership is structured so that it would secure continuity and stability.

The company started out as Java consultants and today is offering IT consulting services in several technologies either by providing customers with an onsite consultant or offering complete solutions by project teams developing entire products ordered by the customer. The consulting services are carried out in three affiliates, additionally, the company has invested in several start-ups. The company has a flat and informal organization structure and the group is organized in specialist units, which are supposed to be the leaders in competence in their respective fields.

Sharing knowledge "rests at the heart of the [Company C] spirit". (from Company C's website) The company organizes an internationally recognized annual conference for software developers and hosts different courses for professionals. Furthermore they participate in the Open Source community as well as maintain a blog for developers.

#### 4.4 Existing Management Control Packages in the Case Companies

##### 4.4.1 Company A

###### *Cultural Controls*

The company culture at Company A is strongly rooted in the company values. The major notion is the enthusiasm for Bitcoin and even though future employees are not necessarily expected to have comprehensive knowledge in this field, they are definitely supposed to show strong interest and a will to learn. This open mindedness, particularly towards Bitcoin technology and a drive to learn about it is the ultimate condition of being recruited to Company A. The aim is to hire "little entrepreneurs" who are independent and self-sufficient in their education. Learning is greatly encouraged and even though the company has currently no resources to organize set courses, knowledge sharing is of prime importance.

In order to maintain this goal, there are regular meetings and team days, where each team member has the opportunity to share their respective objects of work and the eventual occurring problems related to it and get feed-back from the team. This process contributes to transparency, which is another significant value maintained within the company. In the meetings the future prospects and common vision are also discussed.

The freedom to learn and to share knowledge is reflected in the symbolism of the environment. In the opening page of the company website the team is sitting in a sofa located in a bright, open space office, engaged in discussion, and in the foreground there is foosball table. In other pictures there is a white board with post-it notes and team members standing in front of it, again in discussion. These images strongly exemplify the teamwork and knowledge sharing, which is the prevalent way of the daily work, as well as the informal atmosphere. The age group of the employees stretches between 19 and 30 years of age, which even though it is not deliberate, this can be regarded as a symbol of cultural match, as it is driven young people, looking for opportunities to prove themselves who fit the above listed values. Speaking of a small company with highly meaningful values and only eight staff members, it can be concluded that clan control is imposed by the company as a whole.

### *Planning*

Company A's control package contains elements of both long term and action planning. Long term planning is in the form of a business plan which is the responsibility of the CEO in regards to strategic planning. The plan is further broken down into separate sections with the relevant employees responsible for carrying out the plans. Action planning is carried out through weekly meetings and through the use of task management software. Each employee is responsible for the tasks related to their area of responsibility and progress is followed up through the software tools used and the weekly meetings. During the weekly meetings the objectives and activities from the previous week are followed up on and goals are set for the upcoming week.

### *Cybernetic controls*

Budgeting is a very important control system at Company A, and is a complement to planning controls. A long term budget and forecast is in place to 2016 with three different income scenarios. Budgeting is also used in short term cost controls where actual costs are tracked. The company conducts business in several different currencies, including Bitcoin, so cash management and budget control are difficult yet very important tasks. The budget and follow-up are the responsibility of the controller. Employees are aware of the budget, but it is not used as an individual control. The primary function of the budget and forecasting is as a decision making tool for long term planning both in terms of product planning and investment planning and fundraising.

Company A has in place several financial and non-financial metrics. Financial measurements are order placed/completed, cost per acquisition of user and average turnover per user. Non-financial measures include registered users, verified users and development velocity per task per week. The results are reported to the board and shareholders, and the non-financial measures are used internally for improvement purposes. In finding gaps between registered users, verified users and completed purchases, Company A can look for ways to close the gaps and increase the number of purchases from registered users.

### *Rewards and compensation*

Company A does not have any performance based rewards or compensation. There is a share option program, but it is not related to performance or used as a form of control.

### *Administrative Controls*

The CEO and founders along with the Board of Directors are the primary decision makers in Company A. CEO has final say if no consensus is reached. The Board and CEO meet bimonthly and reports are prepared and sent to shareholders monthly. With only eight employees, there is a flat organizational structure. All employees meet weekly to discuss important issues, though the CEO is the final decision maker.

Due to the regulatory requirements related to Bitcoin trading, Company A has detailed procedures in place regarding compliance and the handling of customer accounts. There are no other procedures or policies regarding other tasks or processes.

#### 4.4.2 Company B

##### *Cultural Controls*

Company B has a mission-based operation aiming to make the world more enjoyable for all users. The guiding values in the company are competence, empathy for their clients and wanting to make a difference, and finally commitment to make the necessary efforts. According to the prevailing presumption in the company if all three values are present it is impossible to fail, moreover high quality performance is more related to culture than statistics. Consequently it is the collective performance that is more emphasized as it is supposed to be more important than individual performance.

Company culture has always been present in Company B in an inexplicit way, however especially with regards to the expansive growth of the company, it is considered to be vital to structure and formulate the culture and to create a language for it. The company culture is characterized by the CEO as a “non-criticizing unpretentious culture” and the formative evaluation being one of its corner stones. The formative evaluation is seen more as an organization than a system and as such an integral part of the company culture

The CEO emphasized the relevance of being conscious about maintaining the culture, particularly in a growing phase the company is currently in. Furthermore it is of prime importance to recognize the genuine binding force within the organization, which in Company B is identified as craftsmanship and the profession as in contrast to socialize outside the office. The latter is certainly not prohibited, however it is not particularly encouraged either as it is considered irrelevant from the company’s point of view. On the other hand there are monthly work lunches organized, which are optional and available for everyone in the three regional offices targeting knowledge sharing and development. This strong emphasis on the profession and the core competencies is imposed by the entire company as clan control. It is also supported by the recruitment process, during which the first round is always about assessing the applicant’s personality to see if it fits the company culture and competence assessment only comes in the second round.

Even the CSR policy and strategy are ruled by the dominance of the company’s professional attitude. The aim is to contribute to the greater society in line with the company’s core competence, which is professional skills in the User Experience field. Within the frames of that one day’s work is offered to a specific cause every year. There were no pronounced symbols noticed during the visit at the company office and the interview.

##### *Planning*

Planning at Company B is carried out at different levels. Starting at the top is the long-term vision of the company which gives direction to lower planning levels. The next level is long-term strategic planning which is done for 3-5 years at a time. Company B is currently in a rapid growth phase, and this growth is included in the current long-term plan that they are currently about half way through. The plan includes expansion through Sweden and Scandinavia. The CEO and Board of Directors are responsible for decision making on the long-term strategic level. In the short-term the budget is the basis for annual planning, and

planning also occurs on a quarterly level. Budget planning will be expanded on in the next section. Planning is used as a control and all employees are made aware of the company's vision and long-term plans as well as the short term planning.

#### *Cybernetic Controls*

The budget is the central document used for short term planning. It is prepared annually, but is considered a living document where it is updated monthly based both on the previous month's results and the forecasts for the upcoming month. The budget is discussed in the manager group during their weekly meetings and on a higher level at the board meetings. The planning and budget put into place by the CEO, board, and management group are important control systems by controlling the overall direction of the company and its growth. The budget is used in conjunction with planning and is communicated to employees as such.

Cybernetic controls at Company B limited to two relevant controls due to the current rapid growth phase and the simplicity of a consulting company. The two most important measures are consulting hours invoiced/employee and average price/hour. Employees are made aware of their targets for billable hours, and are expected to meet them. During growth, sales and recruiting are the most important activities and these measures can ensure that the right consultants are sent to customers for the right price. Additionally, the CFO regularly calculates liquidity to be sure the company has resources available to survive through the slower times during summer and Christmas. As part of the long-term plan the company should be in a maturity phase with a slower, steady rate of growth by 2015 and at the time more sophisticated financial and non-financial metrics are expected to be introduced.

#### *Rewards and Compensation*

Company B has bonus programs on a trial basis for regional managers who meet targets and for employees on long-term assignments with a customer. Both programs will soon be discontinued in favor of a new incentive program that is currently under development. Details of the new program could not be shared as it is not complete, however it will involve incentives that are designed to keep employees motivated and engaged on a deeper level. This new program will not include bonuses as the CEO does not feel that they are an effective control or incentive tool.

Formal evaluations are performed annually between the employee and manager where goals are set for the upcoming year regarding assignments and career development and goals from the previous year are discussed and followed up. Additionally, employees are engaged and evaluated through a system described as formative evaluation. This type of evaluation takes place during the course of a project where an employee and his or her manager discuss the work and the manager gives feedback and suggestions for improvements through discussion. This is preferred over other methods of evaluation and review as it avoids directly criticizing or disciplining the employee, yet still results in the desired outcome of the task being performed to expectations.



### *Administrative Controls*

The company's primary decision makers are the CEO and Board of Directors for strategic level decisions and the CEO and management group which is made up of the CEO, CFO and regional managers, for decision making at the operational level. Company B has a rather hierarchical structure with the CEO at the top, then regional managers and directors at the project and department levels.

Company B has a variety of policies and procedures that drive and control daily activities within the company. These include, procedures regarding the project process and quality of the delivered product, procedures guiding the work of individual consultants, human resource policies, and policies regarding corporate social responsibility. The company has a set process for service delivery that is outlined on the website for potential customers.

#### 4.4.3 Company C

### *Cultural Controls*

Company culture is rather explicit in Company C, which has its roots in a couple of years ago when the company was significantly smaller. Company C has always been identified as a family company that is to have strong emphasis on enabling the employees to maintain a good work and life balance. This allows the employees to grow professionally while still maintaining balance with their personal lives. This is important to Company C as employees will be happy and motivated to perform. The management consciously strives for preserving the character and the prominent signs of the above described company culture.

In Company C the clan is represented by the entire company, establishing values and communicating them through a socialization process (Malmi and Brown, 2008). This is also reflected in the recruitment process, as "Company C'ers", as they are called, are primarily selected based on their personal characteristics. The aspirants have to go through several rounds of interviews in which the goal is to find out whether the necessary passion for learning and ability for analytical thinking is present, specific technical skills are only tested in the final round of the recruitment process.

The major values in Company C are knowledge and development. They are facilitated by a number of routines. There is constant communication among the employees in form of regular meetings as well as the office space is designed so that it would accommodate interaction. The company organizes competence development weekends three or four times a year with the purpose of learning about new technologies in order to keep up with the fast changing industry. On the other hand meetings are mostly related to the everyday work processes and are regularly held by the specific project groups. Additional values are freedom and responsibility, the employees have flexible working hours and are not closely supervised but they are also held responsible for completing their tasks. In case the above is not fulfilled, there is room for follow-up either within the frames of the annual personal development assessment or a discussion with project leader, however this happens rarely.

The company values are illustrated by the applied symbols, particularly in the office design there are open spaces and a lounge with both white-boards and a pool table in order to encourage all forms of knowledge exchange. Moreover there is a playroom in the office in case any of the employees has to bring their children to work for some reason, as well as there are regularly held family events to uphold the family company recognition.

### *Planning*

Company C carries out both long-term and action planning, though long-term planning is not used as a control tool. In relation to long-term planning, a business plan is in place that is created and followed-up on by the executive team. There is no regular schedule for updating the business plan. The business plan is only for the consulting companies and was not implemented until 2010. Goals relating to the business plan and budget are set and followed up by the management group, but do not impact employees. Action planning is carried out at the project level, where each project is planned according to a set template document. This document is mostly used for costing purposes, but can also serve as a control tool for employees to stay on schedule for the project. In order to keep employees challenged and committed, the sales team seeks clients and projects that will be the most interesting and challenging for the employees.

### *Cybernetic controls*

Company C did not implement a budget until a relatively late stage in its development. This is because salary costs are the most significant cost in consulting, it was difficult to budget for and the executive team felt that the budget would end up steering decisions as everyone tried to hold the budget. After experiencing a loss in 2010, a budget was introduced in 2011 in order to track costs better. The budget is monitored and used as a control and information system at the management level. The management group reviews the budget each month in order to ensure they are still operating within the budget guidelines. The budget is used in conjunction with forecasting which is done about 3 months into a new year, and is updated every 3 months after that. The budget is updated according to the forecast.

Cybernetic controls in place at Company C are mostly in the form of financial controls. The controller prepares monthly reports to the executive group which in addition to the financial reports includes measures such as turnover/day, turnover/employee and turnover/group. Non-financial measures pertain mainly to the activity level of employees which is the amount of time employees are engaged in customer projects. New accounting software has recently been introduced that will allow employees to track this themselves. It is hoped that by making this figure transparent to employees and managers, the activity level will improve. Currently this measure is followed-up on every month in the management group and is checked against the budget. The sales manager also reports on the sales pipeline as a forecasting and planning tool.

### *Rewards and compensation*

Company C is a knowledge-driven company and their reward and compensation programs reflect that. Employees receive bonuses for attaining certifications related to their area of expertise. Professional

development is also encouraged through competence development workshops held several times throughout the year and employees are also encouraged to write white papers or blog posts or speak at conferences as a way to share their knowledge. Company C understands the importance of attracting and retaining talented employees and much of that is reflected in the company culture. Employees are given a great amount of freedom and trust to carry out their work through flexible work schedules. Additionally, employees may take an extended leave of absence in order to pursue personal interests. A specific example of this is a graphic designer who was granted a leave of absence in order to travel to Thailand to become a certified scuba diver.

#### *Administrative controls*

Company C is an employee owned company and is led by the executive team consisting of the CEOs from Malmö, Stockholm and Copenhagen, the COO, CTO, the controller and Human Resources manager. This group meets monthly and is the prime decision maker for the company at a corporate and strategic level. Daily or lower level decisions are made by the manager or department affected by the decision. For example, project leaders make decisions related to their projects, team managers make decisions regarding their team and so on. Members of the executive team offer advice or make the final decision if one cannot be made at the lower level. Company C has a relatively flat organizational structure. At the top is the executive team with the unit or team managers and then employees. Recently another level of unit and team managers was added as it was deemed necessary due to the size of the company.

Policies and procedures at Company C are outlined in the employee handbook. The handbook contains the legally required policies regarding vacation and sick leave as well as company specific policies related to working hours, time reporting and general expectations. There are no specific work instructions or procedures, instead employees are expected to have the knowledge required to perform the required tasks. Employee evaluations are conducted annually where the employee and manager set goals for the upcoming year and follow-up on goals from the previous year. If an employee is not performing to the expected standards, the manager will speak with them which often is enough for the employee to improve their performance. Severe or repeated issues will result in a written warning. This type of procedural discipline is rarely required, and most employees carry out their expected tasks.

#### 4.5 Summary of Empirical Findings

Table 3 provides a summary of the main findings from each company outlined according to the Malmi and Brown (2008) model.

Cultural Controls							
Clans			Values			Symbols	
Company A	Entire company		Enthusiasm for Bitcoin, open mindedness, drive to learn, transparency			Open office space, picture of foosball table and white boards on website, age group of 19-30	
Company B	Based on craftsmanship and profession		Competence, empathy, commitment			No obvious symbols	
Company C	Entire company „Company C'ers“		Family company, competence, freedom & responsibility			Open space office, elements of common places (white boards and pool table in lounge, kids' room)	
Planning		Cybernetic Controls				Reward and Compensation	
Long-range planning	Action planning	Budgets	Fiancial Measurement Systems	Non Fiancial Measurement Systems	Hybrid Measurement Systems		
Company A	Business plan and strategic planning	Part of weekly meetings	Long and short term budget as financial control	Several measurements calculated and reported to the board and shareholders monthly	Measures relating to user statistics improvement	No hybrid systems used	Options program – not based on performance
Company B	Vision and long term plan provide direction	Carried out in budget and quaterly plans	Primary control tool updated monthly	Basic measures to calculate billed hours and average price	No non-financial measures at this time	No hybrid systems used	Bonus programs have been used but will be phased out with the introduction of a new incentive program currently in development.
Company C	Business Plan	Project level	General budget but not as a control	Financial metrics reported to executive group monthly	Aimed to increase consulting hours by employees	No hybrid systems used	Generous rewards and compensation both financial and non-financial incentives aimed at increasing knowledge and retaining employees
Administrative Controls							
Governance Structure		Organization Structure			Policies and Procedures		
Company A	CEO, founders and Board of Directors the final decision makers		Flat structure with collaborative decision making where possible			Detailed procedures regarding compliance and handling of customer accounts	
Company B	CEO, Board of Directors and Management group are primary decision makers		Heirarchical with different divisons and levels of management			Procedures for projects and daily work routines, human resource policies and CSR policies	
Company C	Employee owned company led by executive group		Relatively flat structure with recent additon of management level developing more heirarchy			Employee handbook outlines general expectations and requirements, but not task specific procedures	

Table 3 Summary of Empirical Findings

## 5. Analysis and Discussion

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*The proposition based on the literature review will be tested against the empirical data collected through the questionnaires and interviews, using a deductive approach.*

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The analysis will be carried out based on contingency theory. As potential variables that can impact the management control package, they will be regarded as contingency factors, which include knowledge-intensity, growth and life-cycle stage of the company within the frame of the MCS control package introduced by Malmi and Brown (2008). The collected data will be analyzed according to the proposition stated in Chapter 3: Knowledge intensity and growth in a company determine the MCS. This is based on the premises that: increased knowledge and task uncertainty will lead to more informal controls; and as a company grows the introduction of more formal controls often become necessary.

### 5.1 Cultural Controls

All three elements of cultural controls can be found in the studied companies, however in different forms and varying interpretations. Moreover, the collected data showed that cultural controls are predominant in the case companies, as well as knowledge relatedness is most apparent in cultural controls compared to other controls. It can be concluded that the values of the case companies determine the management control systems and serve as conceptual ground for how the MCS is built up. Although each of the case companies have strong cultural controls, based on their value systems, these differ significantly. However each of them agree in that they tend to recruit future employees based on how they personalities and personal values fit the company. The primary values in each of the studied companies are based on or related to some form of knowledge and it is in the cultural controls where knowledge is represented most significantly. The findings that cultural controls become highly relevant in a working environment characterized by complexity and uncertainty related to knowledge intensity, are also in resemblance with the literature (Ouchi, 1979; Merchant, 1982; Ditillo 2012). The companies' practice to take values into consideration during the recruitment process is referred to as the first level of impact of values on behavior (Malmi and Brown, 2008).

Knowledge and competence are strongly represented in the values of the studied companies, however in different contexts and to different extent. The major values of Company A focus on product related knowledge, which is the basis of the company. This can be explained by the company's early life-cycle phase, when the most vital aspect of the company's activity is indeed the product, as well as there has not been enough time to develop a more sophisticated value system. Company B is in the phase of rapid growth, being extremely conscious about that such expansion can only be managed effectively in a properly structured way, as expressed by the CEO of the company. The scope of values in Company B is wider than in Company A, the defined values target maintaining a professional attitude in order to provide a high quality of service and customer satisfaction and support growth. Company C, being a well-established business follows a rather different scheme. The management of Company C deliberately strives for preserving a small company feel although it is a relatively large company in a more established

phase. Even though profession related values such as competence and responsibility are also relevant, another paramount value is being a family company, that is, to be attentive of the employees' personal lives. The idea behind is that if the employees are provided opportunities to grow as professionals and to maintain a healthy work and life balance, they will be happy and motivated to perform.

This variation of the value systems can be attributed to growth to a certain degree, as the companies in certain life-cycle phases focus on diverse values, as seen in the case of Company A where the major value is explicitly the product related knowledge. Nonetheless, once a company has reached a certain phase, growth becomes less significant in determining cultural controls. Just like in the case of Company B and Company C, as they both have a wide range and well-grounded values, this way contrasting to Company A. However, comparing the value sets of Company B and Company C, they are also completely different from one another. Company B has its values based on professionalism and focusing on the customer and provided performance, while Company C's focus is directed more internally on the team and has never had the kind of customer focus as Company B. Based on the collected data, it can be concluded that knowledge intensity is a significant determinant of the company values, while the diversity of the values can only be attributed to growth until stability is reached and once the company is established, cultural controls are more of the reflection of the management style and what the entire management control system is supposed to target, that is if it shall apply more output controls or action controls.

Values and clan control as elements of the model cannot be discussed separately. In the three companies there is a clear pattern of how the clan controls are defined by the values in order to promote those. The three companies have the same feature of clan control being represented by the entire company as the clan, which can be explained by that the activities within each company are homogenous. As well as the clan control is perfectly in alignment with the values in each case company. Regarding the goal of the socialization process to be accomplished by clan control, it can be concluded that company B has a significantly divergent approach from Company A and C. In Company A and C, the focus is on the company as a treasury of knowledge and company values and to maintain the team spirit. On the contrary in Company B there is a strong emphasis on the more concrete values related to the profession and core competences.

Similarly to clan control, there is a divergence among Company A and C and Company B in relation to symbols. In their own way both A and C intend to buttress the feeling of providing a laid-back environment for gathering and working together, contrarily Company B does not operate with symbols in the same way as the other two companies do, there are neither visual signs of there being a strong team nor illustration of company culture.

As concluded before, cultural controls determine the other controls in the management control system, which is also in agreement with the conclusion of Alvesson and Kärreman (2004) that "structural forms of control are cultural phenomena themselves" (p. 424), as well as with that of Malmi and Brown (2008) stating that cultural controls provide "a contextual frame for other controls" (p. 295).

## 5.2 Planning

Planning is an element that exists in all three case companies, though it is used differently in each company. In Company A, long-term planning exists primarily at a financial level and the business plan is shared with existing shareholders and potential investors. The business plan is broken down to different areas of responsibility and this part of the plan provides direction and control for the company. Short-term and action planning in Company A takes place primarily in weekly meetings where activities of the previous week and upcoming plans and tasks are discussed. Various software tools are used to track tasks to completion. Long-term planning is primarily used in decision making, though action planning is used as a control through target setting in the weekly meetings. In Company B planning is much more comprehensive and is a significant control. The vision and long-term planning determine the overall direction of the company, and are the foundation for other planning. Short term plans are created and carried out according to the long-term plans. All employees are aware of the plans and the associated goals. In Company C long term planning occurs in the form of a business plan created and maintained by the management group and is used as a decision making tool. Action planning in terms of individual project plans and overall project planning are more significant forms of control at Company C.

Company A's planning is more focused on financial survival in contrast to Company B who has a very structured planning and budgeting system with a strong control function. There seems to be a contradiction when examining Company C, as they do not have and never had the kind of structured planning and budgeting system as Company B. As expressed by Company B's CEO during the interview, many of the controls in place are necessary in order to manage rapid growth. As Company C's growth has been at a steadier rate, structured planning may not have been seen as being necessary. Planning can be viewed as being necessary in a knowledge-intensive firm in order to provide structure in working towards the organization's goals and to counteract the uncertainty that is present in knowledge-intensive firms. This is in agreement with Herremans and Isaac's (2005) Criteria of Control Model, where one of the criterion is focus processes suggesting that a company needs to plan and establish goals in order to know what direction they are going. This element of focus can be important to counteract the uncertainty that results from the high task-complexity that is evident in knowledge-intensive companies (Herremans and Isaac, 2005; Ditillo, 2004; Kärreman, Sveningsson and Alvesson, 2003).

## 5.3 Cybernetic controls

### *Budget*

Budgets are used in all three case companies, but in different ways. In Company A and B budgeting is closely linked to planning. In Company A there is a budget and a 3 year forecast with different scenarios that are primarily used for financial planning purposes. While the forecast is used in long-term planning it is separate from planning. The budget is communicated to employees and is used as a company level control to ensure that everyone is aware of the budget, but are not constricted by it. At a management level, the budget is a predictor of when to begin to seek out new investments due to decreasing resources. Company B's budget is described as a living document that is updated monthly with the previous month's actual figures and forecasts for the coming month. The budget is not viewed as a stand-alone control in

Company B, rather it is communicated to employees in relation to planning and other controls. In Company C there was no budget until 2011 when a loss from the previous year made it a necessity. Forecasting is used in conjunction with budgeting and is updated every three months, and is viewed as a more accurate measure than the budget. There is a connection between budgets and growth, not in the existence of a budget, but in how they are used in the company. In early stages of growth the budget is focused on financial survival as seen in Company A. In later phases, the budget becomes a more comprehensive tool either for information purposes or for control depending on the management style of the company, as originally defined within the cultural controls.

#### *Financial and Non-Financial Measurement Systems*

While all three case companies use cybernetic controls, the degree to which they are used as a control differs and ranges from Company A where they are primarily an information system used for decision making to Company B where they are used as a control.

In Company A, financial measurements related to revenue and separate from the budget, are reported to the board and shareholders and are not used as a performance measure on the individual level. These measures are also used to attract new investors. Non-financial measures in the form of usage statistics are used as a performance measure and regularly discussed during weekly meetings. Each week the targets from the previous week are reviewed and new targets are set for the upcoming week. As Company B currently focuses on managing growth, there are only two measures used at this time. These measures relate specifically to consultant productivity and pricing as the number of hours billed per consultant and the average price per hour. Hours billed per employee is considered as the most important measure in Company B and consultants are expected to meet their set targets. Liquidity is also monitored to ensure resources are available during slower periods. Company C has several revenue related financial measures that are reported each month to the management group. These measures are not used as controls at the individual employee level, but as a control and decision making tool at the management level. Company C also measures the productivity level of each employee in a similar way to company B. There are no specific targets assigned to this measure at this time, but the company is currently upgrading its accounting software, and productivity levels will be tracked through the software and made more transparent to employees. This transparency is hoped to increase productivity levels of employees.

Company A has financial and non-financial measures that differ from the measures used in Company B and Company C. This is due to the differences in a consulting company versus a product or service company. The measures used in Company B and Company C are relevant only in a consulting company where revenue is directly generated through the productivity levels of employees. Company A's measures are focused on the product and how to improve the product in order to generate revenue. Another reason for the difference in the measures used by Company A is the life cycle phase and the focus on attracting investors. This is consistent with Granlund and Taipaleenmäki (2005) who state that knowledge intensive companies in early life-cycle phases have fewer management controls that are mainly financial and are usually in place to attract new investors and to report to existing investors.



### *Common Findings in Cybernetic Controls*

It was found in two of the three case companies that both financial and non-financial measures are used primarily for reporting and not controlling reasons. As such they are mostly used to provide information in order to support decision making, consequently according to Malmi and Brown's (2008) definition they are part of the management accounting system and not the management control system. The exception can be found in Company B where targets are regularly communicated to employees in meetings, CEO letters and in everyday work related situations. This way employees are well aware of the targets they are expected to meet and receive regular feed-back on their performance. In Company A, targets related to non-financial measures are communicated and followed-up on among the employees, but this is the only measure that is used in this way. The explanation to why Company B differs from the other two companies may be that there is a stronger focus on performance compared to Company A and C, that focus more on knowledge management, as also seen in relation to cultural controls. The complexity that characterizes knowledge-intensive firms means that the knowledge of the transformation process is imperfect and the ability to measure output is low (Ouchi 1979, Merchant, 1982) making cybernetic controls less appropriate as a form of control. However there are also differences between Company A and Company C in relation to the complexity of cybernetic controls. This difference can be related to the growth and life-cycle phase of the company. Chenhall (2003), proposes that as a company increases in size, more formal controls become necessary such as budget and process controls.

#### 5.4 Reward and Compensation

Financial rewards are used in all three companies, but Company C is the only company to also use non-financial rewards. Company A has a stock option program that is available to all employees on a company-wide level and it is not based on individual performance. Company B has two financial bonus programs but they are being phased out in favor of a more comprehensive incentive program that is being designed with the goal of motivating employees using primarily non-financial rewards and incentives. The financial bonuses are based on individual performance and target managers who meet set targets and employees who are assigned to long term projects. Evaluation of employees is carried out on a formal level in the form of performance evaluations where goals are set for the coming year and performance from the previous year is discussed. On an informal level, specific tasks are followed up through formative discussions where the employee and manager discuss the task being completed and feedback and suggestions for improvement are given. Company C has the most advanced incentive program including financial and non-financial measures designed to both motivated employees' professional development and to retain talent. Bonuses are given to employees who obtain different levels of certification in their field of expertise, and generous benefits such as flexible working conditions are designed to keep employees motivated to work for the company. The rewards are individual based and rather than focused on meeting set performance targets, they are focused on encouraging professional development of the employees. Annual performance evaluations are conducted between the employee and their manager where actual performance and goals for the upcoming year are discussed.

As the rewards and compensation systems grow with the company, elements of both intrinsic and extrinsic motivation can be found. While the existing system at Company B is primarily extrinsic, there is a conscious effort on the part of the CEO to move towards a more intrinsic system as it is believed that bonus and other financial rewards can be counter-productive and do not lead to the desired results. In Company C even though there are extrinsic elements, the intrinsic elements are more important and are integrated into the company culture. It can be important in a knowledge intensive firm to implement non-financial rewards, as knowledge workers tend to be more intrinsically motivated, and rewards systems should be developed to encourage this (Markova and Ford, 2011).

The differences in rewards and compensation systems between the companies can be attributed to growth. The largest company has a broader rewards and compensation system encompassing both financial and non-financial rewards whereas the smallest company has only one financial reward that is applied to the entire company equally.

## 5.5 Administrative Controls

The organizational design and governance structure vary in the case companies along with the policies and procedures. Company A and C are rather flat organizations, nevertheless Company A is a fairly simple organization due to the low number of employees, while Company C has more organizational levels, since the company reached a certain size that made it necessary to introduce additional positions on middle level. Somewhat differently Company B is more hierarchic, with several levels of managers and directors. Decision-making in the three companies is done accordingly. In Company A it is a straightforward process and although the final decision is made by the Board and the CEO, everyone can express their opinion regarding daily issues. In Company B there are various decision-making groups related to different matters. Finally, in Company C a combination of the above two can be found, operational decisions are made locally in the organization and the executive team deals with issues mostly in strategic questions. The differences can be attributed to the size and the complexity of the organization.

Ownership can function as a form of control. Three distinct ownership structures are presented in the case companies and different tools are applied in each of them, reflecting the make-up of the ownership structure. Company A is accountable to its investors and most controls target financial accountability to current investors and attracting new investors. Company B is owned by the three founders, who still have a very significant control over operations, which needs to be supported by a stricter control system. Company C is employee owned, with all employees having a personal interest in the success of the company allowing for more informal control.

The policies and procedures also vary correspondingly in the three companies. From fundamental, compliance and regulations related procedures in Company A, reporting to the investors; through a well regulated environment with policies and procedures that drive and control daily activities cover more or less every area within Company B, to a more relaxed routine in Company C where the employee handbook covers the major topics that impact the daily work, however no specific instructions are formulated regarding work processes. These variances can be explained by that policies and procedures are the outcome of how the entire management control system functions, which in its turn is rooted in company

culture and management style. Furthermore the organization structure is closely determined by company culture. The strong presence of cultural control and the relatively relaxed policies and procedures in Company A and C, can be explained by that complex tasks that knowledge-intensive firms are engaged in is difficult to convert into work procedures and organizational knowledge is removed from standardized processes to individual skills, leading to the emphasis of strong cultural control as also described in Kärreman, Sveningsson and Alvesson (2002). Even though Company B is a knowledge-intensive firm as well, it is not as much characterized by knowledge management but is more focused on performance control and productivity.

## 5.6 Management Control Package of each Company

Table 4 summarizes the different management controls used by the companies and if they are used for behavioral control, or if their main purpose is to provide information for decision making.

	Company A	Company B	Company C
Cultural Control	control	control	control
Planning	information	control	information
Budget	information	control	information
Financial Measurement System	information	control	information
Non-Financial Measurement System	control	N/A	control
Rewards and Compensation	N/A	control	control
Administrative Control	N/A	control	N/A

*Table 4 Summary of Data Analysis*

All three case companies have a strong culture with an emphasis on values. Cybernetic controls while present in all three companies are less explicit than the cultural controls. This is in agreement with the literature that states that knowledge-intensive firms rely on cultural controls to a greater extent than other controls.

When comparing the elements of the MCS package in the three companies in relation growth, there are two significant findings. Firstly, the controls applied by Company A are noticeably characteristic of a small company, whose key to survival is growth. As such it differs from the other two companies that have fairly

established management control systems. Secondly, Company B and Company C are divergent in the meaning that even though they both have developed MCSs, the emphasis and the use of the individual controls are not only different in the present situation, but they have also evolved differently, suggesting that growth is not a pivotal contingency in this case. Therefore it can be concluded that growth is a significant contingency factor to a certain extent and once a company has reached a necessary size and stabilized its position, growth becomes secondary.

The differences between the use of management controls in Company B and Company C can be explained by the different management styles. The goal of management control in Company B is to achieve the desired performance level through action controls, whereas in Company C there is a tendency of focusing on knowledge management and company culture as a means to reach the desired goals. This contrast is most conspicuous on the level of company culture and is mirrored on all levels of the management control system.

There are several possible reasons to explain the differences between the two approaches. One could be growth, as Company B is rapidly growing and it was stressed by the CEO that they are focusing on managing growth. However, most of the control elements to be found in Company B have never been in use in Company C, so growth as the variable to determine the management control system shall be discarded in this case. The ownership structure of the company can also be considered as a factor in determining the management control system. The two companies have very different ownership structures which can lead to different management control systems. However, insufficient evidence was found to support this. The third possible explanation is how knowledge is regarded in relation to management controls. The major difference can be found in the core competencies of the companies. Company B offers consulting services in only one technology area, while Company C has knowledge in and offers services encompassing several different technologies. Løwendahl et al. (2001) identify two types of value creation, reuse economics and expert economics. Company B's service is centered on reuse economics. They have one core competency that is offered to customers, and they have a detailed process plan that is outlined on their website and carried out by the consultants. Company C mostly focuses on expert economics where customized solutions are developed for customers, though there is an element of reuse economics on some long-term projects for a selection of customers. In Company B and Company C their focus on reuse or expert economics plays a role in their control system. Reuse economics is more predictable as there is less uncertainty which allows for more formal controls such as policies and procedures. Results are easier to measure and plan and the procedures are more standardized and action controls can be applied. Whereas expert economics is not standardized there is more uncertainty and results are more difficult to measure, making outcome and cultural controls more appropriate.

## 6. Conclusion

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*This chapter will summarize the major findings of the thesis to provide a clearer understanding to the reader. Limitations to the research are also discussed and suggestions are made for future research.*

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At the beginning of this thesis a research gap was identified in the area of management control in knowledge intensive firms focusing on growth and knowledge as contingent factors in the development of a management control system. This thesis set out to study how knowledge and growth affect the development of management control systems in knowledge intensive companies.

This thesis studied three knowledge-intensive firms in Sweden in various growth and life-cycle phases in the IT industry. All three companies exhibit very strong cultural controls, though the values and symbols the cultures are based on differ between the companies. There are more differences in cybernetic, rewards and compensation and administrative controls between the three companies. It was found that overall, the culture of the individual companies is a determining factor of the remaining controls. Company B's culture differs from the culture of Company A and Company C and this difference can also be found in the cybernetic and administrative controls. With strong values on competence and customer engagement there are stricter controls in place to ensure a consistent and smooth process for each customer. The culture of Company C is more focused on internal knowledge and this is reflected in their controls. Company A's culture and controls are still maturing, and many non-cultural controls exist due to external factors.

It was found that knowledge is a contingent factor in that the type of knowledge that is the focus of the company can affect the types of controls that exist in the company. The stricter cybernetic controls in Company B are not only due to the differences in culture, but also due to the stronger focus on reuse economics. Furthermore, growth is not as significant of a contingent factor as proposed in the beginning of this thesis, and is only significant until a company reaches a certain phase of growth.

Much of the previous research in knowledge intensive firms has focused primarily on cultural controls. Alvesson and Kärreman (2004) challenge this and suggest that other controls are present in knowledge companies and that the cultural controls can impact the make-up of other controls. Ditillo (2012) focuses his research on knowledge transfer suggesting that different types of knowledge are best suited to different types of controls. Related to growth, Granlund and Taipaleenmäki (2005) relate the evolution of management controls to the life-cycle phase of a company suggesting more controls will be created as the company grows. Yang et al. (2011) find a link between knowledge management and successful growth strategies in knowledge intensive firms, but does not identify how this is a contingent factor in the management control system of a company. By combining the factors of knowledge and growth into a single study, it was found that knowledge is a more significant contingent factor than growth in determining the management control system.

It is problematic to make generalizations from case studies. However, the empirical results can support a previously developed theory, as well as identify appropriate areas for further research (Yin, 2003). In this

thesis three companies were selected as the unit of analysis, although it is uncertain whether the results would be identical if different companies had been studied. It is of interest for future research to conduct a quantitative study, especially regarding growth as a contingent factor, which in this thesis was proven to be a less significant contingency.

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# Appendices

## Appendix 1 – Questionnaire 1

### The Use of Management Control Tools in Your Company

#### A. Company Background

Year of foundation

Number of employees

Annual turnover

Private or listed

B. Following is a list of management control tools. Please describe which tools are used by your company and briefly describe when they were introduced why they were introduced and how they are used.

1. Planning (long-term planning, action planning)
2. Budget
3. Financial measures (turnover per employee, ROI, ROA, growth ratio, etc.)
4. Non-financial measures (employee attendance, quality measures, customer satisfaction, etc.)
5. Reporting (what, how often, by whom and to whom)
6. Reward and compensation (employee bonus and/or incentive programs, professional development programs)
7. Governance structure (who are the primary decision makers, CEO, board of directors, etc.)
8. Organization structure (flat or hierarchical, levels of operation)
9. Policies and procedures (employee handbook, desk processes, etc.)

C. Please describe the company culture

## Appendix 2 – Questionnaire 2

### Questionnaire 2 – Follow-up questions

#### 1. How is the budget used as a control?

Are employees made aware of the budget and their impact on it?

How/in what form are the targets set by the budget communicated to employees?

#### 2. Are there goals or targets for the measurements?

How are they communicated to employees and do they relate to the performance evaluations and individual goal setting?

#### 3. How are plans communicated to the employees? Is there a follow-up on completing the goals set by the plans?