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Management Control Systems in Innovative Startups

A multi case study of Swedish R&D startup companies

Prepared by:

Alma Kljuno

Irina Gureeva

Supervisor:

Peter W Jönsson

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Abstract

Title: Management Control Systems in innovative startups - A multi case study of Swedish R&D startup companies

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Authors: Alma Kljuno, Irina Gureeva

Advisor: Peter W Jönsson

Purpose: Purpose of the thesis is to describe and analyse the management control systems in different startup companies. Moreover, to identify what factors affect the management control systems in the startup companies, and the impact of these management control systems on the company performance. Furthermore, we want to contribute the theoretical knowledge of using MCSs in startups.

Methodology: Since this area of the research is largely unexplored and the environment inside the businesses is highly subjective, the qualitative study with an exploratory approach was conducted.

Theoretical framework: The theoretical framework of this thesis is built upon the theory of management control system for innovative companies.

Empirical foundation: The empirical data has been collected from interviews, documents, websites and academic articles. The results have then been presented in accordance with the theoretical framework which consists of themes for an accessible overview.

Results and conclusions: Startups companies have MCS in place and apply management controls tools widely. Still, these companies are facing with many difficulties and obstacles while establishing these control systems, especially because of the lack of resources and systems. Furthermore, as the company is growing, the procedures are becoming more formal. There are number of factors affecting the implementation and development of MCS among which we consider size and ownership as the most influential.

Key words: management control system, innovation, startups, small business, management control

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Alma Kljuno

Irina Gureeva

Table of content

1. Introduction.....	5
1.1 Background.....	5
1.3 Problem discussion	6
1.4 Purpose.....	7
1.5 Research question	7
2. Methodology.....	8
2.1. Research design	8
2.1.1 Case design	9
2.1.2 Selection of the case companies	9
2.2 Data collection	9
2.2.1 Theoretical framework design	10
2.2.2 Empirical data collection	10
2.2.3 Analysis design	11
2.3 Quality aspects	12
2.3.1 Reliability.....	12
2.3.2 Validity	12
2.3.3 Objectivity.....	12
3. Literature review.....	14
3.1 Previous research of MCS in startups.....	14
3.1.1. Startup definition	14
3.1.2 MCS in startups.....	15
3.1.3 Influential factors on MCS in startups	17
3.2 Framework for analysis of MCSs	19
3.2.1 Formal controls	20
3.2.2 Informal controls.....	26
4. Empirical data	28

4.1 Hansa medical	28
4.1.1 Company background	28
4.1.2 Formal controls	28
4.1.3 Informal controls	32
4.2 MIP Technologies	33
4.2.1 Company background	33
4.2.2 Formal controls	33
4.2.3 Informal controls	36
4.3 Sol Voltaics	36
4.3.1 Company background	36
4.3.2 Formal controls	37
4.3.3 Informal controls	40
4.4 Overview	41
5. Analysis	44
5.1 Formal controls	44
5.1.1 Structure	44
5.1.2 Rules and policies	45
5.1.3 Strategic planning	46
5.1.4 Budget	47
5.1.5 Performance measurement	48
5.1.6 Incentives (reward system)	50
5.2 Informal controls	51
5.2.1 Cultural controls	51
5.2.2 Recruitment process	52
6. Concluding remarks	55
6.1 Contributions	55
6.1.1 MCS in the startup companies	55

6.1.2 Factors affecting the MSc in the startup companies	56
6.2 Suggestions for further research	58
6.3 Limitations	58
8. References	59
Appendix 1	63
Appendix 2	64
Appendix 3	65

1. Introduction

1.1 Background

The healthy state of Swedish economy has given local entrepreneurs plenty to invest in companies and ideas. Furthermore, the government does a lot to support young companies, and there are many funding programs and institutions that encourage innovation and entrepreneurship. According to Donnie SC Lygonis, Senior Advisor at Nordic Innovation House, Sweden is one of Europe's top three spenders in the R&D area, investing 3.6% of GDP in R&D in 2009. Comparison with the EU wide target of 3% GDP investment by 2010 shows that Sweden is ahead of the game. These facts show that Sweden is quite unique as a country when it comes to R&D.

There are many different definitions of a startup company. It is a young company that is just beginning to develop. Startups are usually small and initially financed and operated by a handful of founders or even individuals. Different determinants can be found in the literature in terms of what factors determine that company is still at the startup stage. There are no precise rules on defining startups since revenues, profits and employee numbers vary drastically among companies and industries. Many founders also disagree that acquisition negates startup status. Similarly, public listed companies still can keep the startup status.

Perhaps the most precise definition of a startup is that there is none. It is not a word that is restricted by the number of years a company has been in the business, or the amount of revenue a business pulls in.

Startup companies are driven by innovation. New ideas are necessary for the organization's survival and growth in condition of rapidly changing market (Perkins et al., 2017). The ability to think differently creates the competitive advantages for the startups. The fundamental challenge for such companies is to exploit existing assets and explore its capabilities at the same time in order to stay on top of things related to market and technology change (Tushman & O'Reilly, 2013).

This aspect of the successful business trend drives us to explore how startup companies design and implement management control systems (MCS). There has been a lot of discussion on design aspect of MCSs and performance measurement for manufacturing or service oriented companies. However, there is not much information about using the MCSs in growing research based startup companies.

The use of growing startup companies as a subject of study allows us to catch the differences in the adoption of MCS over time and its impact on the performance. A sample of established companies most likely would already have these systems adopted. Many factors might have an impact on management control systems in startups, and the research on this subject should get more attention in the future.

1.3 Problem discussion

It is believed that the main feature of newly founded firms is a start as a small organization with limited personal and financial resources (Gruber & Henkel, 2006).

Lack of resources creates barriers for a startup to take more beneficial strategic position on the market. In combination with a small size it gives a new company very little of market presence and power. In addition communication inside the startup might be inefficient due to lack of reporting procedures, which enables the company to take different kinds of decisions quickly (Gruber & Henkel, 2006).

Furthermore, the implementation of the organisational structure and distribution of responsibilities might be inefficient or cost a company inside conflicts and disadvantaged position in comparison to established entities. It is also a subject of uncultivated relationship between startup company and the environment. It takes a new company a lot of time and effort to gain trust of all kind of stakeholders by creating reputation and getting professional experience (Gruber & Henkel, 2006).

In addition, according to Davila & Foster (2005), the need for formalizing control systems becomes imperative for startups while growing and failure to properly manage this issue is related to dampened growth and even liquidation. The need for both formal and informal controls is more than noticeable.

Startup companies operate in uncertain environment and lack the organisational internal and external processes. Plenty of factors might be influential at the early stage. Among others, these are: type of ownership, source of financing, phase of the business cycle, industry in which company operates, etc. However, the literature basically provides insight into separate management control tools and only few factors that are expected to be relevant for startups. This paper on the contrary seeks to find more integrative approach, because studies investigating limited number of components could lead to unclear or conflicting results (Haustein et al., 2014).

Carrying out all of the described functions at the same time is problematic without decent MCS. The application of MCS in innovative companies has been addressed in numerous studies. Nevertheless, research on how startup companies work to solve this in issue is limited and there is a need for amore qualitative research in this field.

1.4 Purpose

Purpose of the thesis is to analyse what factors affect the management control systems in the startup companies, and the impact of these management control systems on the company performance. Furthermore, we want to investigate the change in MCSs while growing and developing into bigger firms.

The aim is to describe and analyse the MCSs in different startup companies and conclude if there are patterns to be seen between the interviewed companies. Moreover, we want to contribute to the growing literature on MCS use and development in startups by adding new perspectives in terms of external and internal factors that might have an effect on the design of MCSs in startups.

1.5 Research question

The research questions of this thesis are:

How do management control system change while startups are growing and developing into bigger firms?

What factors are the most influential for management control systems in startups and how these factors affect the implementation of the management control tools?

2. Methodology

This chapter will describe the research choices made while conducting the study, and it will demonstrate the process of collecting data, documentation as well as the research design. The quality of the study will be discussed.

2.1. Research design

The primary aim of the study is to elaborate which external and internal factors might have an effect on the design of MCSs in innovative startups and small businesses. Since this area of the research is largely unexplored and the environment inside the businesses is highly subjective, we conducted the qualitative study. Furthermore, we adopted the exploratory approach in our research.

According to Yin (2003), three conditions should guide the choice of the research method: (1) the type of the research question, (2) the control the researcher have over the events studied, and (3) if the study is focused on historical or contemporary events. In terms of these conditions, our research questions are “what” and “how” questions, we will have no control over the events, and our study is focused on the contemporary events.

Though a formal qualitative research methodology may not exist, the offerings capture the methodological practices that follow directly from some common practices. Firstly the use of flexible rather than fixed research designs and covering choices, such as strengthening a study’s validity, selecting the samples to be studied, and being concerned with generalizing. Secondly, the qualitative research is often characterised by the collection of “field-based” data - appropriately trying to capture contextual conditions as well as participants’ perspectives. Third common practice is the use of non-numeric data in the analysis and lastly, the character of the interpretation of the findings from a qualitative study which can involve challenging conventional generalizations and social stereotypes (Yin, 2010).

Additionally, exploratory type of case study have to be used if one were seeking to answer a question that sought to explain the presumed causal links in real-life interventions that are too complex for the survey or experimental strategies (Yin, 2003).

2.1.1 Case design

The composition of the case study should be identified during the design of the case study (Yin, 2009). According to Yin (2003) the researcher has to identify the case and the specific type of the case that shall be implemented. One more important thing for the writer to take under consideration is the context. We chose the multiple case study, since this type of study can be used to either augur contrasting results for expected reasons or augur similar results in the studies (Yin, 2003). This way the author can clarify whether the findings are valuable or not (Eisenhardt, 1991). When the case studies are compared to each other the researcher also can provide the literature with an important influence from the contrasts and similarities (Vannoni, 2014;2015). An all-embracing fact is that the evidence created from a multiple case study is measured strong and reliable (Baxter & Jack, 2008).

2.1.2 Selection of the case companies

Any use of multiple-case designs should follow a replication, not a sampling logic, and an investigator must choose each case carefully. The cases should serve in a manner similar to multiple experiments, with similar results (a literal replication) or contrasting results (a theoretical replication) predicted explicitly at the outset of the investigation (Yin 2003).

We have used several criteria while choosing our case companies. The case companies in our study have been chosen according to following criteria:

- small businesses aiming for further growth
- companies are recognized for innovation
- they have grown steadily in terms of size and/or product variety since birth
- business offering - research based products

2.2 Data collection

In order to identify factors that affect MCSs in the startups, and examine actual impact on the design of MCS in these companies, interviews have been conducted with three Swedish firms.

2.2.1 Theoretical framework design

Theoretical framework is presented in the Chapter III in form of the summary of previous research on the topic. It provides the description of main conceptual categories in which the observations would be built-in. Furthermore, theory review indicates missing points and necessity of supplementary research required for comprehensive explanation of the MCS in startups.

Data collection has been organized through university's database "Scopus" according to specified criteria. Firstly, we initiated search using the following keywords: "management control system", "innovation", "startups", "small business", "management control". The subject area "Business, management and accounting" and the file type have been chosen as a second step. Documents suitable for the purposes of the current research have been determined from the list of suggestions. Further scanning has been made using the references on similar or the later studies.

The found literature sources have been analyzed for the presence of patterns and themes. Identified concepts have been categorised aiming to synthesize all the existing knowledge on the subject in order to design the theoretical framework. It was used as a tool to compare and identify differences and similarities between the findings of other researches and reflect on the weaknesses. The resulting theoretical framework has being used to identify causal links and structure the empirical data meaningfully and make sense of it.

2.2.2 Empirical data collection

In our study the primary data was collected through interviews with selected firms. According to Eisenhart (2007) interviews are a highly efficient way to gather rich, empirical data, especially when the phenomenon of interest is highly episodic and infrequent. In total, 5 interviews were conducted in the three case companies. Interviews were semi-structured, and lasted between 25 and 60 minutes with the aim to clarify how MCSs are designed, its role in successful startup's performance and growth, its evaluation and influential factors. The companies were selected from the group of companies being in research progress with a focus on creation of unique high technology products in the following fields: biopharmaceutical, supplier & engineering (chemicals), solar and semiconductor industry. The number of employees in the companies is in the range between 8 and 50 (one of them is a

subsidiary of the company with approximately 290 employees). The company's' age is in the range between 10 and 18 years.

In one of the case companies, Sol Voltaics AB, we conducted three interviews, and one interview at each of the remaining two. In each company the CFO was interviewed, with one exception - it was not possible to interview the CFO in one of the companies - MIP Technologies AB, so we interviewed Operational manager instead. The reason for interviewing the CFOs was that they usually were involved in the process of MCS design in general. The remaining two interviews were conducted with directors of the research departments in one of the case companies, Sol Voltaics. We were aiming to interview more than one person in order to avoid and limit bias. According to Eisenhart (2007), a key approach to limit bias is using numerous and highly knowledgeable informants who view the focal phenomena from diverse perspectives.

All five interviews were semi-structured face to face interviews. The used interview guide can be found in the Appendix 3. Face-to-face interviews allow the observation not only of verbal but also of non-verbal data (Hiller & DiLuzio, 2004). When in the same room, for instance, participant and interviewer have access to facial expressions, gestures, and other paraverbal communications that may enrich the meaning of the spoken words (Carr & Worth, 2001). Furthermore, a semi-structured interview is symbolised by having open questions and by a narrative character. Respondent gets an opportunity to give longer answers.

Regarding secondary data, the articles, books, dissertations and journals have been found mostly through electronic searches in different databases. According to Jacobsen (2002), secondary data is a data that originates from information gathered by other researchers. Furthermore, we used companies' internal documents and data available on the official web pages.

2.2.3 Analysis design

This study was based on the descriptive comparative analysis. According to the Merriam Webster Dictionary comparison means an examination of two or more items to establish similarities and dissimilarities. We used the previous research on the topic and our own empirical findings in order to examine, compare and draw conclusions about similarities and dissimilarities. At the same time, we tried to identify factors that affect MCSs in the startups

according to our empirics, and get answers to our research questions. The results of our analysis are presented in the form of concluding remarks.

2.3 Quality aspects

2.3.1 Reliability

According to Lawrence Neuman, reliability means “dependability of consistency” and he moreover argues that qualitative researchers use variety of techniques such as interviews, participation and documents to record their observations consistently. That is in the qualitative study the extent to which the process of the study is stable and consistent over time and across researchers (Miles & Huberman, 1994). We have tried to explain in detail the process of data collection and interpretation in order to make it more comprehensive and easy to follow.

2.3.2 Validity

According to Miles and Huberman (1994) internal validity is the extent to which the findings of the studies make sense and authentically portray reality. While collecting our primary data we were aware of the fact that our respondents might be biased because of different factors, such as their position in the company. We were also aware that the respondents may not fully grasp the concepts presented to them. Considering this, we tried to present the theoretical concepts as clear as possible and provided definitions and descriptions. If an answer seemed vague, we tried to follow it up with sub questions. We also tried to achieve the internal validity by recording the interviews and we have sent our empirical findings back to participants to confirm veracity and accuracy of the collected data.

According to Bryman and Bell (2007) external validity concerns the degree of generalizability of the findings from the research. In our study we tried to increase the possibility of reaching external validity by using the exploratory multi-case method. On the other hand, external validity is decreased by the low number of respondents in each company.

2.3.3 Objectivity

Objectivity is the relative neutrality and freedom from unacknowledged researcher biases (Miles & Huberman, 1994). In order to stay objective we recorded the interviews, and we

interpreted the answers first individually and then collectively. This was done in order to try to avoid biases in the interpretation and the analysis.

3. Literature review

This chapter introduces the summary of theoretical models that are applicable for research of management control systems in startups.

3.1 Previous research of MCS in startups

3.1.1. Startup definition

For the purposes of this paper we use the term “startup” to describe the companies we sample for interviewing and subsequent research.

The definition of “startup company” is not presented unambiguously in the academic literature. Different studies are interpreting it in different ways, and it is difficult to find a clear definition.

Some of the early studies agreed that startups are small new independent businesses established by individuals to become self-employed. These studies also investigate reasons leading entrepreneurs/owner-managers to start their businesses and explore effect of these reasons on growth and size of the business (Birley & Westhead, 1994).

Colwell and Narayanan (2010) define startup firm as a part of “new venture community” (Appendix 1) with mode of action “entrepreneurship” and specific goals as “survival, legitimacy and success”. The authors’ understanding of startup creation is based on the process of seeking resources for subsequent beneficial usage. Startups aim to commercialise intellectual property. Mostly startups are in the R&D phase of business lifecycle. They can be financed by venture capital firms (VC’s). VC’s are private equity investing in startups financial capital or other recourses (Colwell & Narayanan, 2010).

According to the authors there are two models of entrepreneurial behaviour. Entrepreneurs may enter the existing market or create an entirely new product. The authors believe that entrepreneurs create value on the market through introducing innovative products which satisfy the needs customers have not even been aware they have. Thus, this type of entrepreneurs take risk of their innovation could not be valuable in a future. In other words the only competitive advantage of startups is unique vision or idea and they act under high uncertain conditions (Colwell & Narayanan, 2010).

Other group of researches supported the argument that startup is a company which is facing the challenge of “the liabilities of newness and smallness” (Gruber & Henkel, 2006). “The

liability of newness” indicates the risk of collapse of a new company in the first few years after its birth. This problem arises due to lack of organisational structure, specific roles and capabilities.

Many authors have noted that startup companies are characterised by intensive growth and focused their research in a “growth firm” context (Sandelin, 2008). Granlund and Taipaleenmäki (2005) came up with the new economy firm (NEF) definition. NEF includes “businesses targeting at fast growth or already fast-growing firms that operate in the information and communications technology business and biotech (life sciences) industry, and are characterized by their R&D and knowledge intensity as well as venture capital finance” (Granlund & Taipaleenmäki, 2005, p. 22). Davila and Foster measure the growth of the early stage company by the number of employees. For the purpose of their research they define startup as a company with 50 to 150 employees at the sampling date, less than 10 years old and independent (Davila & Foster, 2005).

Despite studies mentioned above look on the startups companies from different angles, some common features are noticeable. In general all the researches share the position that “startups are new businesses which are started from scratch” (Kolvereid & Isaksen, 2006).

Due to the fact that our definition might be too broad an additional requirement for identification of startups is an active involvement in high technology R&D projects. In this research we decided to interpret the “startup company” definition as follows: startup is a fast growing company aiming for further growth in innovative sphere, being in R&D phase.

3.1.2 MCS in startups

The need of application of MCSs in startup companies was examined by several studies and the results vary. According to Davila (2005), researches relied on informal process in order to achieve high productivity in innovation and change in companies “such as culture, team composition and leadership to manage innovation” (p. 40). So the management controls and lack of self governance for employees might be harmful for creative process.

The author speaks about negative connection between innovation and formalization. Initiation of successful idea generation process is possible only in conditions of intense communication inside the organization and with outside parties to create ideas, support to reward experimentation.

On the other hand, management controls might be useful for the ability of startup to successfully grow which depends not only on its informal process, but also on mechanisms that support knowledge development and transformation (Davila, 2005).

MCS is an important tool for the companies because it helps to establish the organised internal and external processes for successful interaction with different groups of stakeholders and as a consequence improve the performance and increase value (Davila & Foster, 2007).

Recently, the adoption MCSs in early-stage companies has begun to receive additional attention. Startups often tend to have a lack of structure and efficient decision-making process. Implementation of MCSs in startups may lead to companies' growth. Company size was an explanation of the speed of adoption of a particular MCS according to the past empirical findings (Davila & Foster, 2007).

Davila and Foster examine the evolution of 78 early-stage startup companies starting from their funding and 46 individual systems from different MCS categories: financial planning, human resource evaluation, strategic planning, product development, sales/marketing, and partnerships (Davila & Foster, 2007).

Authors analyze the speed of adoption of financial planning and financial evaluation systems in relation to six other MCS categories. They find financial planning to be the most widely adopted MCS category in early stage startup companies. Human resource planning and strategic planning are also used widely. The results show that number of employees, venture capital, international operations and time to revenue all have an impact on the successful adoption of MCS and subsequent growth of a company. In general the finding shows significance of MCS for the startups (Davila & Foster, 2007).

Granlund and Taipaleenmäki (2005) made a qualitative research of management controls in startups or "new economy firms" (NEFs) in their terminology. They were interested in development trends and problems companies experience while adopting MCS. Their findings show that the main difference between NEFs and established companies is a time pressure which forces to focus on things other than control. This research as well as other on the same topic notes the impact of such factor as investors' (subsequent shareholders) expectations (Granlund & Taipaleenmäki, 2005).

The studies mentioned above have made the most contribution to the theory related of MCS adoption in startup companies. However, some influential factors determining MCS implementation are still unexplored.

3.1.3 Influential factors on MCS in startups

In order to elaborate the issue of necessity of adoption of MCS in startups, we want to focus on the approach which argues that there is no universal MCS for all companies. The system should be adapted to the circumstances a company faces (Otley, 1980).

To have a clear conception of MCSs suitable for startups we identified several factors which could be influential in the case of smart choice of management control tools. Factors expected to be relevant for startups have been identified from the previous literature review.

Davila and Foster provide empirical evidence of continuous relation of evolution of MCS and company size, measured by number of employees (Davila & Foster, 2007). The research of Granlund and Taipaleenmäki also highlights the role of venture capital or in other words investor’s expectations as an important factor (Granlund & Taipaleenmäki, 2005).

MCS in startups are influenced by the traditional factors same for all kinds of companies and specific factors (Haustein et al., 2014). Haustein identifies 11 contingency factors in 3 categories affecting MCSs in innovative companies, of which eight are classified into external and organizational characteristics and 3 are innovation related (Appendix 2). We found some of the factors applicable for the purposes of this study and modify them to be suitable for startups. As a result we define the following factors which might be influential for MCSs in startups (Table 1).

Table 1 Factors affecting MCS in startups

External	Environmental uncertainty
Organisational	The degree of autonomy granted to employees
	Ownership
	Firm size
	Organisational maturity
Startup related	Innovation capability
	Venture capital financing

Source: Haustein et al., 2014

We don't exclude the existence of other contingent factors that influence MCS design in startup companies, but the main focus is on the most basic and therefore the most important factors. When it comes to the external factors, the most important fact to mention is that startup companies are facing a high environmental uncertainty. Being for a long time in R&D phase is risky for a variety of reasons starting from great dependence on investors' financing and high probability that the final product might fail on the market.

Furthermore, it is important to mention and elaborate some organizational factors as well. The degree of autonomy granted to employees keeps them responsible for their own decisions and as a consequence for the entire company's performance. High level of self governance is critical for startups in order to create special environment with flexible communication and decentralised decision making (Haustein et al., 2014).

It is supported by the majority of researches that ownership is a factor affecting the design of MCS and willingness of managers to make changes (Ferreira & Otley, 2009). It may vary depending on the number of owners and distribution of shares between them. If all the power is in hands of a few in family owned companies, they may affect the MCSs directly. In case of a large number of minor owners (e.g. listed company), they are not interested in process of internal control, because the main focus is on the final result (Haustein et al., 2014).

Since the basic feature of startups is fast growth, the number of employees continuously rises. It makes managers lose the ability to personally monitor performers. Growth of company's size increases the amount of information to be processed by management which requires making MCS more formalized (Davila & Foster 2005).

Organisational maturity depends on the stage of lifecycle company is currently on. Granlund and Taipaleenmäki (2005) show in their study that as companies are becoming more mature, they are more prone to the bureaucratic MCSs (Granlund & Taipaleenmäki, 2005). This is relevant for startup companies, because they are considered mostly as immature (Haustein et al., 2014).

There are some startup related factors that are important to mention, e.x. innovation capability and venture capital financing. The common feature of the companies examined in this paper is their tendency to innovate and the ability to generate product and process innovations. It requires startup companies to adjust MCS in accordance with their need to develop innovation capability (Haustein et al., 2014).

Startup companies are strongly dependent on external financing which could be organised by private investors, banks or from public sources, etc. Thus, venture capital plays a crucial role in making MCS in startups more complex and efficient (Granlund & Taipaleenmäki, 2005).

3.2 Framework for analysis of MCSs

In this section different MCS frameworks chosen for this paper are presented.

For purposes of this paper we are using the definition of Management control system (MCS), suggested by Simons (1995) which is “the formal, information-based routines and procedures used by managers to maintain or alter patterns in organizational activities” (Simons, 1995, p.170).

This study distinguishes between formal and informal types of management controls based on the way of management interaction in the internal processes. Earlier studies have envisioned formal control as a mechanism initiated by management presented in a written form. Recently, the written form and introduction of informal control by management (e.g. human resources policies or corporate culture) became quite common for the companies with a well-established MCSs. Different interpretation of these terms has been developed in different frameworks. Similarities in some of the most influential frameworks distinguishing between formal and informal types of control are summarised in Table 2.

Table 2 MCS frameworks

Type of control	MCS frameworks				
	Malmi&Brown	Simons	Ouchi	Ferreira&Otley	
Formal controls:					
Structure	Administrative control	Interactive control	Market control	8 measures of components: vision&mission key success factors organization structure strategies&plans key performance measures (KPI) target setting, performance evaluation, reward system 4 measures of mechanisms and features of PMS	
Rules and policies					
Strategy (planning; objectives, goals, targets)	Planning	Boundary system	Bureaucratic control		
Budget	Cybernetic controls	Diagnostic control			
PMS (Financial, non-financial measurements)	Reward and compensation				
Incentives					
Informal controls:					
Recruitment process	Cultural controls	Belief system	Clan control		
Cultural controls					

Source: Hausteijn et al., 2014

Management control system as a package was presented in Malmi and Brown's (2008) framework. It proposes a very general definition of management control "broadly maps the tools, systems and practices managers have available to formally and informally direct employee behavior" (Malmi & Brown, 2008, p. 295). Taking into attention that startup companies are usually young small or medium size enterprises, this framework includes elements that are not applicable and might be only useful for established companies.

Simons' framework mostly concentrates on the using of MCSs rather than their design while it is crucial for immature companies and for the purpose of this study to analyze the implementation and further development of MCSs in startups.

Ferreira and Otley's framework (2005) of Performance measurement system (PMS) considers dimension of twelve formal control aspects. Eight of them focus on components of the system and the rest on the enabling mechanism and features. Informal controls are not considered as a main part of the system by the framework (Ferreira & Otley, 2009).

Ouchi's framework (1979) in turn draws attention to the necessity of enabling control instruments in the area of recruitment process and subsequent socialization of employees and to creating norms of professional behaviour. It becomes significant in startups firms due to demand on highly qualified professionals and limited specific skills on the labour market (Ouchi, 1979).

Thus, different frameworks have been synthesized and adopted under startup company's special needs and conditions for the purposes of our research.

3.2.1 Formal controls

3.2.1.1 Structure

Malmi and Brown consider organizational structure as a type of control which creates unique intra-organisational style of communication and authority. It provides both horizontal and vertical coordination (Malmi, Brown, 2008).

According to Johnson et al.(2005), there are multiple types of organizational structure. These types include: the functional, the multidivisional, the holding, the matrix, the transnational, the team based and the project based company. Basically, organizational structure is a set of responsibilities and accountabilities of employees. It defines specific role for every individual

and demonstrates the information flow chart in the process of decision making. Thus, the organizational structure “is clearly a fundamental control element... and in the longer-term a necessary issue that requires specific consideration as organizations grow and develop” (Ferreira & Otley, 2009, p. 269).

Moreover, it “arrangements influence the efficiency of work, the motivation of individuals, information flows and control systems and can help shape the future of the organization” (Chenhall, 2003).

The type of organizational structure mostly varies by mechanism of control processes operation: horizontal, vertical or combination. Firm structure might be more or less decentralized which is significant for the communication process and decision making. Through organizational structure information flows and decision making process might be regulated. It also allows manipulating individual motivation of employees by giving them more freedom by changing the level of complexity, decentralisation and administrative intensity (Haustein et al., 2014). However, Ouchi argues that hierarchies mostly fail in transferring control accurately from top to bottom (Ouchi, 1979).

3.2.1.2 Rules and policies

The adoption of R&P aims to aid the company in negative circumstances which are mostly unpredictable under the high level of uncertainty especially for startup companies. It is impossible to prescribe the action plan for all the uncertainties the company could face. Concentration on the execution of the requirements of all existent R&P could lead to slowing down of internal processes and inability of employees to effectively react in case of unexpected problems.

Malmi and Brown’s administrative controls include policies and procedures as well. These controls intend to drive employee’ behaviour via the company’s policies and procedures, as well as employee’ monitoring and behaviour to contribute to the company’s main goals (Malmi & Brown, 2008).

Simons’ interpretation of such type of controls as rules and policies is defined as “boundary system”. It is formal list of limits and rules introduced by management requiring a compulsory execution by all of the organizational members. Boundary system is implemented in the form of internal written policies and standards like a code of conduct for

example. It is usually based on the analysis of possible risks, typically stated in negative terms (Simons, 1995).

Ouchi in his framework also highlights rules and policies categorised in “bureaucracy controls”. Since high technology startups are the firms output of which depends on the ability to effectively use employee’s knowledge as a source of value creation, it could be defined as a “clan”. “Clan lacks ...the explicit rules of the bureaucracy, it relies for its control upon a deep level of common agreement between members on what constitutes proper behavior, and it requires a high level of commitment on the part of each individual to those socially prescribed behaviors” (Ouchi, 1979, p.838).

In conditions of high technological complexity, management is not able to impose specific rules and policies. Wide adoption of R&P makes companies inflexible and changes resistance which could be harmful for the startup’s successful performance and rapid growth (Haustein et al., 2014).

3.2.1.3 Strategic planning

In the Malmi and Brown’s package (2008) long-term planning is explained as a mechanism that establishes objectives and goals, which have a more strategic focus. This control is adopted in several steps. First of all, the goals of the functional areas of the organization are defined to set direction for effort and behaviour. Secondly, standards to be achieved in relation to the goal need to be provided. Lastly, actions of groups and individuals are controlled in order to be in congruence with goals. Strategic planning defines direction of the company, future activities and helps managers to guide employees regarding required actions (Malmi & Brown, 2008).

According to Simons, creation of links to control system supports implementation of business strategy (Simons, 1994).

Ferreira and Otley see the strategy in a strong relationship with MCS and the structure, so it should be examined together. They show the difference between strategy formulation, which is agreement on the path to the desired objectives, and the implementation which is continuous monitoring of compliance with decided strategic choices (Ferreira & Otley, 2009).

Davila indicates that project uncertainty and strategy are vital for design of MCSs. Strategic planning systems as set of core values, organization charts, definition of milestones etc. are among the first adopted MCSs in startups (Davila, 2000).

Long-term strategic planning supposed to be less concentrated on prescription of particular internal actions and processes, but should be focused mostly on non-financial goals as scientific advancement, development of innovative technologies and ultimate customer satisfaction (Haustein et al., 2014).

The plan should take into account the necessity of continuous growth through employment of high-skilled personnel provided with a high level of autonomy which is an important factor for achievement of flexibility and creation of spirit of innovation and experimentation (Haustein et al., 2014).

3.2.1.4 Budget

Budget is one of the cybernetic controls included in Malmi and Brown's management control system package. The usage of budget is almost universal and it serves for different purposes: integration processes, resource allocation decisions. As a control mechanism it works as an acceptable performance plan with post evaluation of compliance. In contrast to strategic planning, budget is made in strong relation with accounting and finance. This process also involves building employees commitment to the plan (Malmi & Brown, 2008).

In Simons' framework budget is a part of "Diagnostic controls". The author considers budget as formal feedback system to track distortion from present goals and manage it in advance (Simons, 1995).

The importance of budget as a control rises in the companies in R&D process due to external financing (Haustein et al., 2014).

Ferreira and Otley's framework does not focus much on budgeting and even in some extent presents it together with strategic planning. The authors argue that it has lost the relevance in today's highly competitive and changing environment (Ferreira, Otley, 2009).

Startups are forced by investors to implement controls concerning funding. Davila and Foster's findings say that venture capitalists require operating and cash budgets because they

are interested in a long-term control. The authors also find an association between the adoption of operating budgets and company growth (Davila & Foster, 2005).

Due to startups having a high level of uncertainty managers and investors feel much more confident if these stick to the budget. All of the researches focused on the topic of usage of budget in startups come up to the same conclusion - budget adoption is the first and most widely used category of financial planning and formal control implemented by startups (Haustein at al., 2014).

3.2.1.5 Performance measurement

Set of cybernetic controls in Malmi and Brown's package includes financial and non-financial measures and hybrids which contain both. This type of controls according to the authors helps to measure the performance and compare it to the standards (Malmi & Brown, 2008).

In order to drive performance in conformity with strategic objectives and provide adequate monitoring, organisations implement performance measurements (PM).

Organisations formulate and implement performance measures focusing on their own strategic priorities and on the external environment as well (Neely et al., 2005). Thus, it has become crucial to define what to measure, in which way and how to organise relations of these measures to the objectives and between each other. The need to design adequate Performance measurement system (PMS) arises in this case. It should include the use of financial as well as non-financial performance measures linked to the organisation's business strategy (Franco-Santos et al., 2012). Different types of frameworks which could be used as PMS are widely described in the literature. The most common of them is the Balanced scorecard (Kaplan & Norton, 1992).

Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of an action. PMS can be examined at three different levels (Neely et al., 2005):

- the individual performance measures,
- the set of performance measures,
- the relationship between the PMS and the environment within which it operates.

PMS is a tool that allows managers to identify best practices in the organisation. It supports efficient decision-making process and higher level of control.

Performance evaluation is critical for the control. It helps to identify problematic areas and react to them in a timely matter. Formal evaluation of activities could be held on organisational and individual level (Ferreira & Otley, 2009).

3.2.1.6 Incentives (reward system)

Since management control is a process that keeps usage of available recourses efficient and effective in compliance with objectives of the organisation, the right choice of incentives becomes crucial for successful performance.

“Rewards are typically the outcome of performance evaluations...Rewards can include both financial and non-financial elements” (Ferreira & Otley, 2009, p. 273).

Reward and compensation controls focus on motivating the employees to increase their performance. It is the process of incentivizing employees with monetary compensation once goals are attained (Malmi & Brown, 2008).

Baule and Soost identified three key factors which are strongly connected and could be used to offer employees attractive workplace: intrinsic motivation, non-financial incentives and social environment (Baule & Soost, 2016).

The way of using incentives depends on type of performance required. The work in startups is based on quality type diverse tasks, which imply a high degree of complexity and more skills and personal involvement. This type of tasks is by itself an attractive advantage for the potential “bright minds” employees aimed to challenges. At the same time complex tasks should be closely linked to the intrinsic motivation. In its turn non-financial incentives have an effect on intrinsic motivation (Baule & Soost, 2016).

Recently group reward practices have become more popular. This type of reward is based on collective achievement of set targets and could be useful for developing internal culture. There are still a number of challenges in application of this type of reward system (Ferreira & Otley, 2009).

3.2.2 Informal controls

3.2.2.1 Cultural controls

Simons (1995) suggests that the one of the informal types of management control is the belief system. The design of this system is based on core values of the organisation. Organisation's strategy defines its vision and mission, which is communicated through creation of formal documents.

Another way values on behaviour inside the organization spread are informal control processes such as group norms, socialization and culture. According to Ouchi (1979) there are several types of controls in organizations: market, bureaucracy and clan. Organisations usually exercise mixture of those types, but in particular we would focus on observing socialization process, which refers to the unique properties of startup firms where the type of control could be defined as a clan. Norms of reciprocity, legitimate authority, shared values and beliefs are typical social requirements for this type of control. There is a reliance on control based on a common understanding and informal agreement about professional behaviour and high commitment of each individual to those socially prescribed proper behaviour (Ouchi, 1979).

Employees value the possibility to work close to highly qualified colleagues in a competitive but friendly atmosphere, or in other words to become a part of professional environment. The ability to become a part of professional environment and feel confident among other people is developed in teambuilding activities. Regular informal meetings such as corporate lunch or team games help to find a common language and demonstrate personalities. Described ways of development of socialization process are expected to develop social environment and stimulate employee's autonomy and self determination.

Taking organizational objectives by an individual as his or her own objectives keeps the person motivated. No additional management control is needed, when employees' goals are set up in accordance with organizational goals.

3.2.2.2 Recruitment process

Simons'belief system explicitly sets shared beliefs that influence purposes and direction of the company. It provides employees with guidance for professional behaviour. As a result of implementation of strong belief system, managers expect to attract new and inspire current

employees with positive attitude. These workers share the values and could bring fresh energy and motivation to the organization (Simons, 1994).

People hired according to their motivation, understanding and acceptance of company's values don't need supervision, just guidance from senior colleagues. In other case, organization is supposed to develop and maintain supervisory system to monitor, evaluate and correct employees' behaviour, which might be costly and inefficient for a startup.

It is important for newcomers to be inspired by the opportunity not only to get the salary and experience, but at the same time to make an impact on the development in general. Making an employee a part of something bigger than just a business is a competitive advantage of a startup company. An internal atmosphere, where people are driven by the belief of providing measurable improvement for society, creates reliable control system and attracts only individuals who fit these standards.

4. Empirical data

We focused mostly on R&D companies while doing this work, and we conducted interviews with 3 different companies in this area. The information from the interviews is presented in different sections, one for each company. It starts with short presentation of the company, and continues with reproduction of what was said on the interview.

4.1 Hansa medical

4.1.1 Company background

Hansa Medical was founded in 2007, and this is as biotech pharmaceutical company in development stage having no products on the market yet. The product development is focused on immunomodulatory enzymes for treatment and prevention of rare and severe autoimmune conditions and transplant rejection. The company is also doing clinical studies in autoimmune diseases. Hansa Medical is traded on the stock market, and it is listed on NASDAQ Stockholm (ticker: HMED). Although the business was founded 10 years ago and traded on the stock market, the company is still characterised as a startup, especially because of the progress in research and increased development in the last 2 years. Today, they have 30 employees and planning to hire more people in the near future.

“The company is existing for many years, it was not a lot people from beginning and now, since we achieved more in our research, we have to employ more people.”,Eva-Maria Joed, CFO

The interview was held with Eva-Maria Joed, CFO of the company and it began with the short tour around in the office. We could see laboratories, many small offices where one or two people were sitting and large conference room. The company is sharing a main building with other mostly R&D companies.

4.1.2 Formal controls

The organizational structure of the company has been changed significantly over time. Eight years ago it was 5 employees, only researchers together with the CEO, and today there are clearly defined and specified departments, together with responsible managers - vice presidents for each department. The research department was extremely focused on hiring more highly qualified personnel, together with the clinical department focusing on the

clinical studies only, and finance department and investor relations are also in place. The commercial and marketing departments are still in development phase, while company is getting closer to having a finalized product on the market.

“Over the last 12 months, we have also continued to build a strong, committed team at Hansa Medical, in order to prepare ourselves for the next exciting phase of the company’s growth.”, Göran Arvidsson, CEO

Management team consists of eight people, together with the CEO. The Board of directors \was established when the company was founded, and it consists of six people together with the chairman. The overall task of the board is to manage the affairs of the company in the best possible manner on behalf of the shareholders. The board must continuously evaluate the group’s operations, development and financial situation, as well as the operative management.

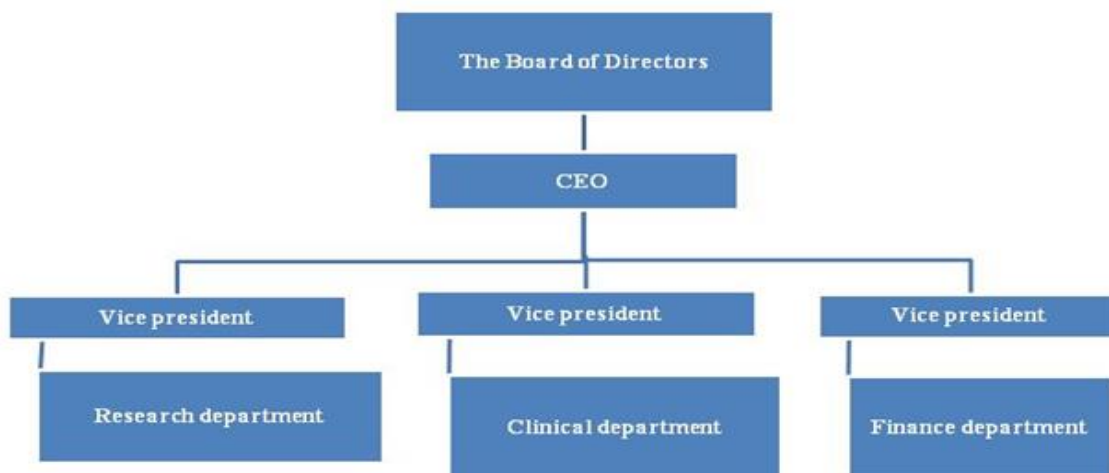


Fig.1 Organisational structure of Hansa medical

The biggest change for the company in the last period was engaging in more clinical studies, and increasing number of employees in accordance with that. The company has grown by approximately 50 % in the last two years.

Despite rapid growth, the company is still attached to the mostly informal procedures and policies. There is no formal purchase order system for instance, and finance department needs to keep track on the budget spendings. The travel policy is more formal, together with the safety procedures.

“Improvements in this field are time consuming, and we would need to have more follow up reports.” , Eva-Maria Joed, CFO

The company’s goals are mostly non-financial, connected to the research and milestones, and key success factor is a step ahead in the research.

Due to the more formal administrative structure, the company is engaged in using formal management control systems as well. At this point, the budget is the most important tool being used. This tool is used mostly for control purposes and resource allocation. The management team and project leaders are mostly involved in the process of creating budgets, together with the Board of Directors. Budget is created for every year, and it is combined with rolling forecasts for every quartal. Budget and rolling forecast need to be approved and signed by the Board of Directors. The company is not using budgets for strategic purposes, mostly because managers want to avoid the negative impact on the idea creation and research progress.

The company is evaluating its performance on the organizational level, with the help of the milestones. These milestones are set for each quartal and are derived from company’s objectives. Milestones represent steps ahead in the research and the product development and involve clinical studies. Detailed description of these performance measures is confidential, and clinical studies mostly involve demonstration that the product is efficacious and well tolerated with a favourable safety profile.

“To summarize, Hansa Medical has reached several important clinical and regulatory milestones. And although we set our objectives high, we have managed to meet them according to plan.”,Göran Arvidsson, CEO

Performance is evaluated on the individual level as well, and managers are discussing targets, objectives and goals with employees twice a year. This affects both bonus and pay raise opportunity for the individual.

Although the milestones for this year are in place, same cannot be said for the incentive plans. According to the CFO, the company has not decided yet what type of reward system will be used this year. The reason for this is low level of satisfaction among the employees with the last year’s incentive plans. The CFO is hoping to have incentive plan in place by the beginning of June. Additionally, the long term share based incentive plan is in place, and every employee has opportunity to get shares.

According to the information retrieved from the company's web site, at the extraordinary general meeting in Hansa Medical, held on 21 November 2016, it was resolved to adopt a long-term incentive programme in the form of a performance based share programme for employees of the group ("LTIP 2016"). LTIP 2016 has been implemented to motivate and retain competent employees as well as for the alignment of the targets of the employees with those of the shareholders and the company, as well as to increase the motivation of meeting and exceeding the company's financial targets.

Participants who, with certain exceptions, are employed by Hansa Medical during the entire programme period of three years will, by the end of the period, receive the so called performance shares, i.e. listed Hansa Medical shares, free of charge, provided that the total shareholder return (the return to shareholders through an increased share price and reinvestments of any dividends during the vesting period) on the company's ordinary shares exceeds 25 percent (maximum allotment is obtained if the total shareholder return amounts to 100 percent) during the programme period.

"Last year we had incentive bonus, for most employees, and this year we didn't decide yet, so we don't have any routine in type of performance measures. Bonus system last year was based on general goals for the company and the target measuring was discretionary by the board.", Eva-Maria Joed, CFO

As claimed by the CFO, monetary rewards are not in the focus for the employees to the certain degree, and intrinsic motivation is more dominant. People are more interested in the personal development and the success in the field. Good atmosphere and cooperation is also appreciated more.

"I don't think that monetary rewards are critical, not that important for survival. Another things make a good company. It is more about having control and having more autonomy. People here have that.", Eva-Maria Joed, CFO

The purpose of the incentive plans is to make people stay and reach the objectives of the company. These plans should be designed to drive positive outcomes and to keep people focused on the company objectives.

Management is facing with difficulties and obstacles while creating these plans, since expected effects are sometimes lacking, and in some situations even lead to the unwanted behaviour.

On the other side, employees are also afraid that incentive plans could lead to competition among different projects, and that was seen as a potential problem. The employees have needed skills and experience, but the system is lacking, both technical and working procedures systems, that could be more efficient. The lack of HR department could be also potential problem as the company is growing.

4.1.3 Informal controls

One tradition within the firm aiming to improve teamwork are the activities that are arranged twice a year, once in the summer, and once in the winter. The company has some more informal holiday traditions as well, e.x. exchanging eastern eggs with the candy. Another tradition present at the office in Lund is the common breakfast for the personnel every Friday. The company is planning a big trip to Barcelona this year, to celebrate success and progress in the research. Hansa Medical is dedicated to providing a stimulating and encouraging environment for all employees, and everyone benefits from regular reviews, feedback and knowledge sharing between individuals and teams.

Hansa Medical started recently with the project that is aiming the improvements in the company culture. At this stage of development, managers are trying to identify what changes in the company culture are necessary for the future.

“We engaged in this project to decide what are today and does that work for us, and if we want to change it.”, Eva-Maria Joed, CFO

Since the need for the new staff is mentioned more than once, the question about recruitment process has emerged. When recruiting new staff members, finding flexible and humble people with a genuine interest in the industry is the key, together with required skills and knowledge. Finding people with a personality that matches the firm’s values is very important, but the overall recruitment process is still very informal - department managers are usually making contacts personally to the potential candidates for the position. Additionally, the company is planning to engage in more formal recruitment procedures in the future.

“The personality of the potential candidates is very important, and managers usually rely on their gut while deciding if someone is a got fit.”, Eva-Maria Joed, CFO

It is worth of mentioning that level of potential uncertainty is also affecting performance and motivation, but only to the certain degree. Financing in question can affect motivation in both directions, perhaps more negatively than positively.

4.2 MIP Technologies

4.2.1 Company background

MIP Technologies, was founded in 1999 in Lund, at Ideon Science Center, and it was based on business idea of making special and quite unique type of products. The company is specialised in the design and production of specialty and custom-made polymeric separation materials also called resins or adsorbents, including molecularly imprinted polymers (MIPs). The company became a subsidiary of the company Biotage in 2010, but this acquisition did not negate the startup status of MIP Technologies, since company is still considered as a different entity and its own legal unit. Today, MIP technologies have eight employees, and the company is outsourcing some administrative activities to the mother company.

The mother company, Biotage is headquartered in Uppsala and has offices in the US, UK, China, Korea and Japan. Biotage has approximately 290 employees and had sales of 610 MSEK in 2015. Biotage is listed on the NASDAQ OMX Nordic.

“Our research is just a part of many operational activities done by mother company Biotage and we are our own legal unit. That is why our entity still can be considered as in the startup phase.”

We held interview with Jonas Eriksson, Operations Manager. The interview started with the short tour guide in the office, while Jonas told us more details about company products and operations. We could see closed office plan where people were sitting mainly behind closed doors, in the offices, and there was a large conference room. The company is sharing a main building with other mostly R&D companies.

4.2.2 Formal controls

The company has been through many changes in the organizational structure since acquisition, and the fact that company actually reduced number of employees from around 20 to 8 since then can be considered as the biggest change. Organizational change occurred

because of big strategic changes regarding operations and product development. It was decided that company focus will be moved from doing research for the customers to the product development.

“It was partly because we have changed the strategy, since we didn't do so much research, we didn't need that many people either. And also we use resources in the mother company, administrative resources for example.”, Jonas Eriksson, Operational Manager

Company is divided in 2 main departments: operations and analytical. R&D department was abolished due to strategic change, and other administrative departments like finance and marketing were outsourced to the mother company. The management consists of three people: one site manager together with 2 department managers.

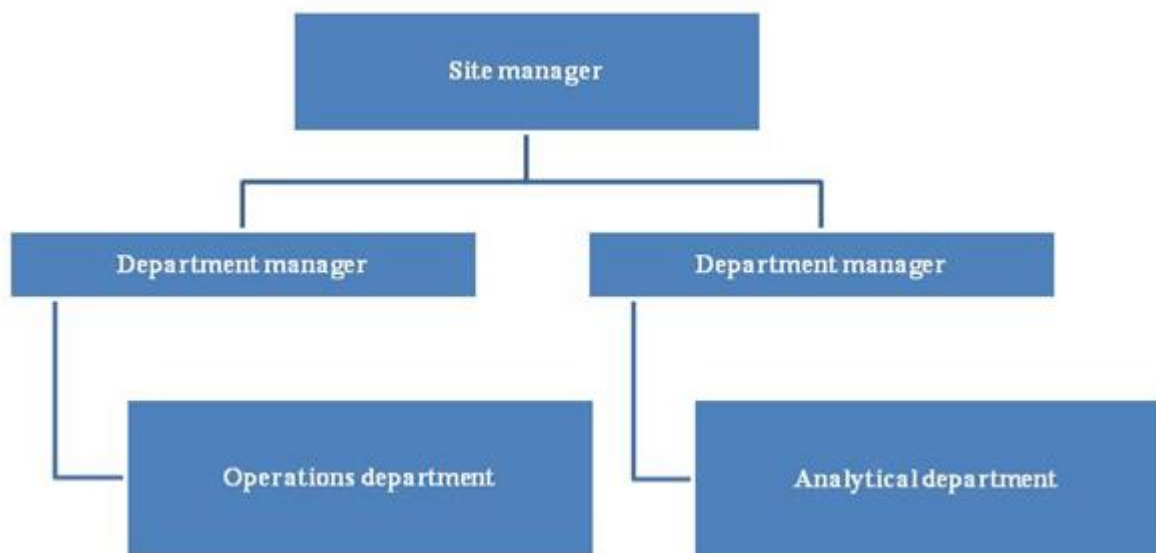


Fig.2 Organizational structure of MIP Technologies

The fact that administration is outsourced and that company is supported completely in this area from the mother company, helps MIP Technologies to focus more on the product development.

The company is following many mostly formal procedures - some of these are introduced and adopted from the mother company, while others are local and internal. The most important policies are those regarding IT, travel, safety, health and environment. The company is working on updating these policies continuously.

The mentioned strategy is short term, and company will probably hire more people in the future. The company goals are both financial and quality goals - reaching the right quality of the work. The goals for business development are also in place, and these goals are focused on the product development and contract research that the company does for its customers. Management team is responsible for setting these goals. The company goals are communicated to others through meetings on a weekly basis.

Regarding formal management control systems the processes are mostly local, although many administrative activities are outsourced to the mother company. The most important management control tool is a budget, and the company is engaged in using 2 different types of budgets - one for the costs and the other for the revenues. Department managers are responsible for creating and follow up, together with the site manager for the final approval. The purchase system is also formal and it is created in accordance with ISO 9001. The purchase system has a formal name - supplies, and it covers both cost centers - departments.

The company is evaluating performance locally, on the organizational level. Performance evaluation is based on setting targets, and measuring objectives for these targets. Objectives are measured on a monthly basis. These targets are technical, closely related to scientific research and product development. The mother company is involved in setting these targets, since targets need to be signed off by the mother company on a quarterly basis. Detailed information about the targets is internal and confidential.

Performance is evaluated on the individual level as well, and managers are discussing targets, objectives and goals with employees once a year. This affects both bonus and pay raise opportunity for the individual. This process is usually handled locally, but company can use HR resources from the mother company if needed.

Neither Biotage nor MIP Technologies are using some other reward system, rather than bonuses. This system is called non-fixed salary, it is linked to organizational performance, and employees have no problems accepting this incentive plan. The key motivational factors for employees personal development and step ahead in the research regarding product development. According to Operational Manager, monetary rewards are not in the focus for employees, and good working conditions and atmosphere is appreciated more.

“Since we are so small, there is a big opportunity to get personal development, and work with different art of work. I think that personal development motivates more than the monetary rewards do. “, Jonas Eriksson, Operational Manager

The purpose of the incentive plans is to get extra percentage from employees, and to affect outcomes positively.

Management is facing with difficulties and obstacles while creating these plans, mostly while setting targets, and the biggest challenge is to set targets that are not only measurable and reachable, but also challenging and stimulating.

On the other hand, employees are faced with problems regarding lack of resources, since the number of employees is reduced, and certain type of work still needs to be done regarding maintaining the systems and structures. This lack of resources is contradictory with the strategy, and it is serious obstacle for employees. In other words, to reach targets, amount of work can be overwhelming for the company staff.

4.2.3 Informal controls

The company is organizing get together activities for employees 2 times a year, and the aim is to improve teamwork and knowledge sharing. The company culture is about people wanting to share knowledge, develop themselves and develop each other.

“We don't have any specific groups, but we share knowledge all the time. We are only 8 people so everyone is involved all the time.”, Jonas Eriksson, Operational Manager

There is no formal hiring procedure at the time, and when recruiting new staff members, finding Innovative and highly skilled is the most important.

The company is secured financially from the Biotage, the mother company, but it is not clear what type of activities will be done in the future, and how the company will look like. The questions regarding the short term strategy are also remaining unclear.

4.3 Sol Voltaics

4.3.1 Company background

Sol Voltaics AB was founded in 2008 by the world-renowned nanotechnology expert Lars Samuelson in Lund, with the focus to improve the efficiency of energy capture, generation and storage using miniscule amounts of novel nanomaterials. Sol Voltaics is a spinout of QuNano AB, a company created to commercialise research from Lund University. The main

focus of this company is the solar market, and the main activity is nanotechnology research. The company's product is not on the market yet, which means no revenues from sales. The company operates thanks to financial backing from some of the strongest and biggest Nordic investors that provide funding, important know how and industry expertise. These investors are both private and state owned companies. Today, the company has 50 employees, with big plans to hire at least 20 more people in the following 2 years.

The company is still considered as a startup, due to work with the innovative technology and still being in R&D phase. Innovation is the key success factor, and the goal is commercializing the process technology and materials to realise the promise of much better price-performance solar cells and panels, where all parts of the business can prosper while promoting a clean, solar energy future.

“Innovation is a base for our product, and majority of activities at the company are based on our innovative ability.”, Marie Svensson, CFO

The main interview was conducted with the CFO of the company Marie Svensson, but we got an opportunity to get answers to our questions from other employees as well. The interview started with the short tour around the office, where we got an opportunity to meet some of the employees. The office plan is open, giving a sense of community and collaboration.

4.3.2 Formal controls

The organizational structure of the company has changed significantly over time, due to rapid growth in the last 2 years. Today the company is divided in six main departments, where four of these are divided per different type of research together. The two remaining departments are administration and marketing. Administration department includes Finance, IT, and HR. Every department has a director responsible for the whole team. HR department is working efficiently to find more skilled people and expand the Sol team.

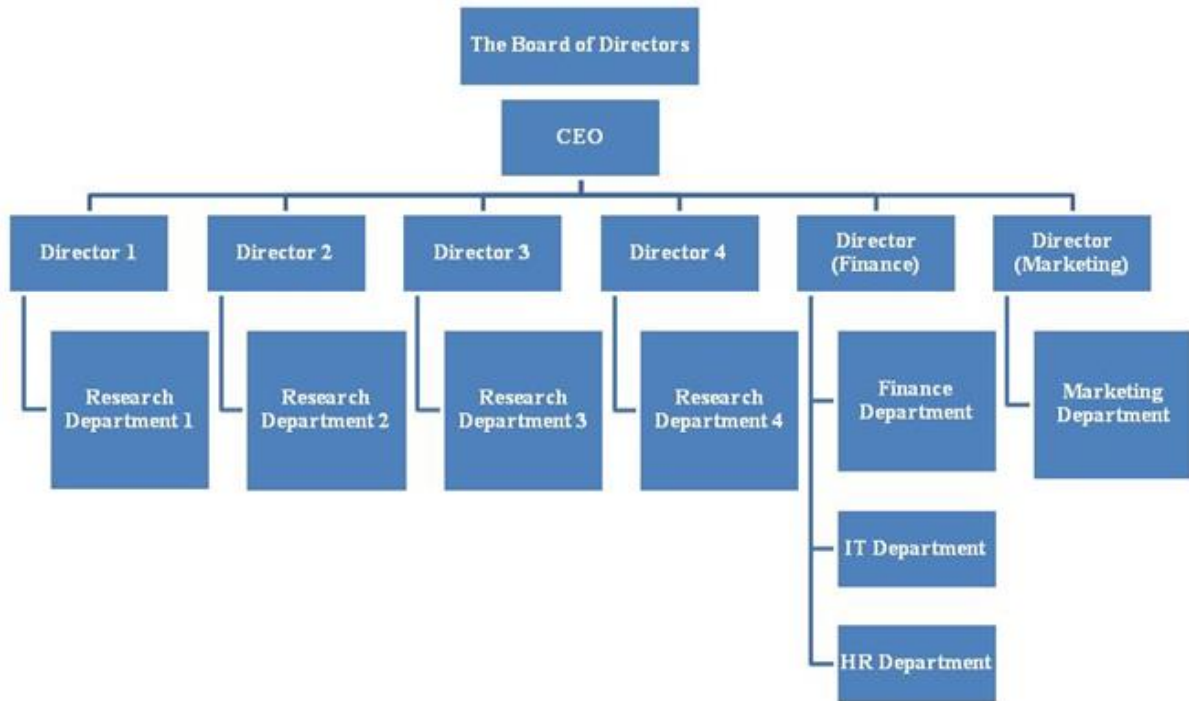


Fig.3 Organizational structure of Sol Voltaics

“We are growing rapidly and are continuously looking for new skilled team-members. We search for creative and committed people with and interest in the environmental nanotechnology.”, Anna Dahlen, HR Manager

The management team consists of eight people, together with the CEO. The Board of directors was established when the company was founded, and the members are mostly representatives from each of the investment firms, together with the chairman. The board has a significant and the final role when it comes to decision making and approval.

The biggest challenge for the company at the moment is the coordination of all activities due to the rapid growth. The company’s growth led to many changes in procedures and policies, which became more formal. The company has formal time reporting policy, travel policy, expense report policy, IT policy, safety policy, health and environment policy etc.

The company goals are both financial and non-financial. It is important to assure reasonable payback time for the investors, but also offer the product to the market that will make a significant difference for environment, while maintaining low prices, compared to similar

products existing on the market at the moment. To get on the market with the product is also crucial company goal.

The company is engaged in using formal administrative and management control systems. From the financial aspect, budget is the most important management control tool. Each department gets a budget for a whole year. Budget is divided in terms of different types of expenses (ex. capital expenses, consumables, materials...). Budget is used as financial action plan, and it serves as an indicator of all the costs linked to each of research and other activities, and it supports management decisions throughout the year. Budgeting allows the management to monitor and control the business, throughout comparison between actual and budgeted results. Finance department produce financial statements for every month, and the actual spendings are being compared with the budget. Director of every department must comment on this statements, and explain potential deviations. This is financial aspect of the performance evaluation. These statements are also presented to the Board of Directors. From the short conversation with one of the department directors, we could find out that directors are concerned that budget might affect negatively innovation capability and idea creation in the future.

“The problem is that as we grow, many more rules and restrictions are coming up, e.x. Budgets are more rigid, every new project requires very strict follow up, and I am afraid that my team will start to avoid generating new ideas, because they can not provide a required follow up on the project. It was more informal until now, but 2017 is a lot more demanding for us. “, Greg Alcott, Director of operations engineering

The company is evaluating its performance on the organizational level, with the help of the performance measures - technical milestones. These milestones are put in place once a year and 90% of the company's resources are focused on it. Milestones stem from market requirements in the solar space, the technology teams discuss how to meet them, and after that, plans are codified. These milestones are technical, related to the research and the product development. Status of the milestones is communicated via the managers and at CEO briefings. Detailed information about milestones is internal and confidential. As the company is moving closer to the product, market milestones will be put in place, and these are starting to happen now.

“Our milestones are difficult, but not impossible. Therefore, the level of performance is very high.”, Erik Smith, CEO

When it comes to performance evaluations, the goal is to have those tied as best as possible to hitting concrete results toward objectives. The milestones are evaluated in different time frames, most often quarterly. There are also portions of the evaluation which are peer reviewed. Every employee is evaluated on the yearly basis. Directors of different departments are responsible for evaluation. The Board of Directors also has a right to evaluate employees, activities and processes at any time.

When it comes to rewards, there are promotions, pay raises and bonuses. According to the company policy, bonuses are possible in two cases: if every department reaches a goal (a full amount is guaranteed), and if one of departments fails to reach the goals (a half of the bonus amount is guaranteed). Bonuses are tied to company-wide achievements. The company also receives options. There are also promotions and pay raises. After employee evaluation, responsible director can suggest and propose people to be promoted. The final decision is made by the Board of Directors. Promotions also lead to more options in the company.

The employees are mostly motivated with progress in the research and prestige and acknowledgment for success. Monetary rewards are in minor focus, according to Marie Svensson, CFO.

The purpose of incentive plans is to make job position more attractive, and to attract experts in the area from all over the world. Management is facing with difficulties while creating these incentive plans, since many people are involved in the process, and every change has to be approved by the Board of Directors. The approval cycle is long.

On the other side, employees are not entirely satisfied with incentive plans, since one department failure with achieving milestones means less or no bonus for all employees. The company is working very hard to provide everything that employees need for successful completion of tasks. For example, the company is investing a lot in employee education and skills improvement.

4.3.3 Informal controls

The company is organizing many activities for the employees all year long. The group of employees called “Activity group” is in charge for arranging these activities, and there is special budget for these types of spendings. Another tradition present at Sol Voltaics is the common breakfast for the personnel every Friday. Employees are also active in organizing spontaneous after work activities. The goal is to get to know each other better, and improve teamwork and cooperation.

“The company culture and knowledge sharing is very important for us, and we are using these informal systems to support the discovery of new ideas.”, Marie Svensson, CFO

“In my opinion, our company culture and the working climate is supporting the discovery of new ideas. For example, our open office plan supports knowledge sharing and communication. I think that these systems are supporting innovation more indirectly.”, Ingvar Åberg, Director of Cell and membrane

From HR perspective, employee satisfaction is crucial for their performance. At Sol Voltaics, employee satisfaction is measured by employee motivation, level of stress at work, positive moral, and the goal achievements. On the other hand, employees need to be controlled as well. Time spend at work is controlled by the time reporting system, where every employee is required to fill in his/her working hours. These hours are being checked and approved in the end of month by the responsible director. When it comes to recruiting new people, it is important to find flexible and innovative people. HR manager is involved in the process, and company is even using certain software and tools in the recruitment process.

“We hire experts and scientists from all over the world, and our employees are very important asset when it comes to encouraging the innovation process. Our employees are problem solvers, and that contributes a lot to our product.”, Marie Svensson, CFO

The level of potential uncertainty is also affecting performance and motivation, but not to a large degree. Financing in question motivates employees to perform the best they can.

“The uncertainty for the future of the company is on high level, but that is not affecting employees’ motivation to a large degree. Everyone is doing the best they can”, Marie Svensson, CFO

4.4 Overview

In order to present all the information received from respondents in comprehensible manner we created comparison table (Table 3). The usage of a particular management control tool is described according to the way it is adopted by the interviewed company.

All the companies have been founded more than 10 years ago, but they are still in R&D process. Their activities are related to the high-technology sector, such that invented products are unique and have no analogues on the market. Due to long period of functioning and

changing number of employees companies have MCS implemented and quite developed for startups.

Sampled for current study companies have different type of ownership. Hansa medical is listed on stock exchange, so the owners are minor shareholders. MIP Technologies is owned by Mother Company Biotech. The owners of Sol Voltaics are few strongest and biggest Nordic private investors.

Similarities and differences in the usage of management control tools have been widely identified. The behaviour of Hansa medical and Sol Voltaics is almost identical, but MIP technologies in some cases shows another way of control formalisation.

Speaking about organisational structure, the researched companies have different level of decentralization which has changed since its foundation. Hansa medical and Sol Voltaics both experienced a rapid growth in last two years. The number of employees increased, new departments were formed or are in the stage of creation. Each department has a manager which reports to CEO. Together they are accountable to the Board of Directors. Thus, information flows vertically and vital decisions approval ultimately is centralised.

MIP technology on the contrary abolished the research department and reduced the number of employees. There is no controlling organ except site manager. The decision-making authority has been delegated, so their structure is still hierarchical, but might be defined as more decentralized comparing to other companies.

Use of such management control tool as R&P is widespread between interviewers. Hansa medical and Sol Voltaics implemented number of policies during past two years of rapid growth. MIP Technologies inherits most of the policies from the mother company.

Hansa medical and Sol Voltaics are still in progress of R&D of the product that is why their main goals for now are nonfinancial connected to the research and milestones. They want to offer their product to the market at reasonable prices and with the maximum benefit to society.

Recently the strategy of MIP technologies has changed. It was decided to abolish research department and focus on the product development. Their strategic plan includes financial and quality goals which are communicated on a weekly basis.

Budget is a common feature for all respondents. However, in two of our case companies, Sol Voltaics and Hansa Medical, the Board of Directors has the last word when it comes to

budget creation and approval process. In our third company, MIP technology, budget process is controlled by the mother company Biotage.

Two of three companies, Sol Voltaics and Hansa Medical, are using milestones as the basis of performance measurement, and the third company, MIP Technologies is setting targets and measuring objectives for these targets.

Sol Voltaics and Hansa Medical have more formal way of measuring performance comparing to MIP Technologies, since the performance measurement system is controlled by the Board of Directors for both cases. On the other hand, MIP Technologies is not controlled by the mother company in the terms of measuring performance.

Sol Voltaics has more formal procedures in creating incentive plans comparing to other two companies, and we presume that this might be affected by the role of the Board of Directors in decision making. On the other hand, Hansa Medical is lacking structure and formal procedures. MIP Technologies chose a simple way in creating incentive plans - company adopted procedures and rules from the mother company.

Moving to informal controls, all the companies strive to personnel development through knowledge sharing organizing team building activities and planting traditions. Regarding recruiting process, only Sol Voltaics has specific HR procedures, other companies use personal contacts to search for staff.

Table 3 Comparison table

	Hansa medical	MIP Technologies	Sol Voltaics
Formal controls:			
Structure	centralased/hierarhical	centralased/hierarhical	centralased/hierarhical
Rules and policies	Yes	Yes	Yes
Strategic planning	Non-financial goals	Financial and quality goals	Financial and non-financial goals
Budget	Yes	Yes	Yes
Performance measurements	Milestones	Measuring objectives for set targets	Milestones
Incentives	Financial	Financial	Financial Non-financial
Informal controls:			
Cultural controls	Teambuiding activities	Teambuiding activities	Teambuiding activities
Recruitment process	Personal connections	Personal connections	HR procedures

5. Analysis

In this chapter the empirical findings will be analyzed within the theoretical frameworks.

There is a summary table at the end of every section to derive the impact of contingent factors on management control tools. The plus sign at intersection of these variables shows the existence of the effect of particular factor on particular management control tool we identified.

5.1 Formal controls

5.1.1 Structure

From the empirical data we could observe that all of the interviewed companies have functional type of the organizational structure. Despite this common feature the informational flows and approval processes differ due to the influence of contingency factors.

The complexity of decision-making process and information processing rises as startups grow and become more mature. In line with the literature saying that as the company grows its MCS become more formalized (Davila & Foster, 2005), we found out that structure tends to become less decentralised.

Decentralized organizational structures imply little of close supervision and hence high degree of autonomy. As we can observe from our empirics, employees experience lack of the self-control. Communication and decision making processes are regulated through organizational structure. Roles and responsibilities of employees are defined and accountability is easily controlled. This finding contradicts the statement of numerous studies about the positive relation of decentralization and innovation (Haustein et al., 2014).

In general the results do not express the possibility of employees deciding over their own actions and being involved in the decision-making process. This finding is not in line with Davila's opinion that a hierarchical organizational structure is not common for innovative businesses. However, it does not look as a problem for interviewers and despite the existence of hierarchical less decentralized structure, companies develop in accordance with strategic plan with no influence on its innovative capability.

Ownership contingency factor has an influence on the company's organizational structure. According to empirical data in Chapter Four the highest concentration of ownership has MIP Technologies and the lowest one Hansa medical. For MIP Technologies vital decisions are

taken by the mother company. For the rest of respondents the Board of Directors is involved in decision-making process as representatives of the owners while the owners might stay aside.

Table 4 sums up the analysis of organizational structure of the examined companies in association with potentially influential contingent factors.

Table 4 Organisational structure of respondents and contingent factors

	Environmental uncertainty	The degree of autonomy granted to employees	Ownership	Firm size	Organisational maturity	Innovation capability	Venture capital financing
Structure		+	+	+	+		

5.1.2 Rules and policies

Throughout the interviews companies have not expressed that their employees could act independently and decide on their own what action to take. Respondents have adopted some R&P requiring a compulsory execution by all of the organizational members. The variety of formal list of rules increased over time, because growth of the firms' size caused communication and control problems. It forced managers to formalize and standardize procedures by implementing R&P in form of written manuals and documents. The literature supports our finding by the claiming that usage of R&P increases as a management control tool with company growth from early to mature stages of the life cycle (Granlund & Taipaleenmäki, 2005).

Due to the variety of ownership types described in the previous section, researched companies experience different level of adoption of formal R&P. There is an inverse correlation between concentration of ownership and formalization of MCS. Davila (2005) as well as Granlund (2005) note that when the company starts growing and its shares become publicly traded, investors demand an installment of professional control (Davila & Foster, 2005; Granlund & Taipaleenmäki, 2005). These facts explain the reason of presence more developed formal controls in particular implemented rules and policies in Hansa medical and Sol Voltaics.

It is expected that management of high-tech startup companies experience pressure from the investors' expectations. Therefore, there is a tendency of stronger and earlier bureaucratization of internal processes in form of adoption of R&P (Haustein et al., 2014).

The empirical data confirms this statement. Mostly representative is a situation with Sol Voltaics which is VC-backed with a greater number of policies and control over its execution.

Table 5 sums up the analysis of “rules and policies” formal management control tool of examined companies in association with potentially influential contingent factors.

Table 5 Rules and policies of respondents and contingent factors

	Environmental uncertainty	The degree of autonomy granted to employees	Ownership	Firm size	Organisational maturity	Innovation capability	Venture capital financing
Rules and policies			+	+	+		+

5.1.3 Strategic planning

All the respondents use differentiation business strategy due to development of market unique product for different customer segments. This aim is being achieved through creativity and innovation, requires less formal type of control.

Planning is the hardest area to manage in startups due to uncertainty of environment and obscure results of the research. The key factor in this situation is to step ahead in the research. This is the reason for companies to achieve their goals and objectives in structured manner.

Since companies aim to grow, their strategic plan includes hiring more highly qualified people to existent departments and for creation of additional parts in the organizational structure.

The current study found the common feature in strategic planning for all respondents. They use milestones deriving from goals and objectives to make sure that they are moving in the planned direction. Davila indicated that in conditions of high project uncertainty strategic planning as set of milestones is among the first adopted by startups and this is confirmed by experience of interviewers (Davila & Foster, 2005).

In accordance with the literature review, our findings show that strategic plans of researched companies are formulated by defining the desired objectives mostly as non-financial goals: as scientific advancement, development of innovative technologies and ultimate customer

satisfaction. The implementation of the strategy is continuous monitoring of compliance with decided strategic choices.

Since it is important for startup companies to ensure reasonable payback time for investors, they formulating strategic objectives and goals in accordance with the expectations of financiers.

Table 6 sums up the analysis of strategic planning of examined companies in association with potentially influential contingent factors.

Table 6 Strategic planning of respondents and contingent factors

	Environmental uncertainty	The degree of autonomy granted to employees	Ownership	Firm size	Organisational maturity	Innovation capability	Venture capital financing
Strategic planning	+			+	+		+

5.1.4 Budget

All 3 companies in our study use budgets, and managers presume budget as the essential formal management control tool. Complexity of the overall process of creating and using budgets varies among companies due to size, but the purpose is similar - budgets are mostly used for resource allocation decisions and as a control tool. This is in line with the theory (Malmi & Brown, 2008) and it supports the fact that the budget is even used in small businesses as a one of cybernetic control tools.

For all 3 interviewed companies, budgeting allows the management to monitor and control the business throughout comparison between actual and budgeted results. Moreover, we could observe that ownership and financing are significant factors that determine budgets in startups, since in all three case companies the owners have a final word when it comes to setting up a budget for a certain period.

In all three companies, budget is considered as the most important management control tool. This is supported by the theory since many researchers on the topic claim that budget adoption is the first and most widely used category of financial planning and formal control implemented by startups (Davila& Foster, 2005).

One of the interviewed companies, Sol Voltaics is one step ahead, and in this company budget is used as a financial action plan. In this case, budget serves as an indicator of all the

costs linked to each of research and other activities, and it supports management decisions throughout the year. In other words, budgets are used both diagnostically and interactively (Simons, 1994). On the other side, Hansa Medical and MIP technologies use budgets only as a diagnostic tool, and strategic choices do not have clear connection with the budgets.

We presume that company growth is one of the most influential factors, when it comes to this widened use of the budgets, due to the fact that Sol Voltaics is biggest considering the number of employees and this company has more complex organizational structure. This is related to what Davila and Foster (2005) claimed regarding an association between the adoption of operating budgets and company growth.

Furthermore, it is clear that organizational factors are generally influencing budgets in the small businesses. Besides the company size, the level of centralization is also influencing budgeting processes in small businesses. In other words, budgets are becoming more formal and rigid, as the company structure is getting more centralised.

External factors, as environmental uncertainty have a little or no impact on budgets, according to our empirical findings. On the other hand, innovation capability might be negatively affected with budgets while company is growing. Managers in Sol Voltaics and Hansa are worried that more rigid budgets will lead to less autonomy in work, what will have negative impact on the innovation capability.

Table 7 sums up the analysis of budget of examined companies as a management control tool in association with potentially influential contingent factors.

Table 7 Budget of respondents and contingent factors

	Environmental uncertainty	The degree of autonomy granted to employees	Ownership	Firm size	Organisational maturity	Innovation capability	Venture capital financing
Budget		+	+	+	+	+	

5.1.5 Performance measurement

According to our empirical findings all three case companies are committed to measuring performance on the both organizational and individual level. According to Neely et al. (2005) organizations develop and implement performance measures focusing on their own strategic priorities and on the external environment as well. This statement is in line with our empirical

findings, since all three companies have developed performance measurement systems within the set strategic priorities.

Many authors are stressing the importance of designing the adequate performance measurement system, including both financial and non-financial measures and using different frameworks (Ferreira & Otley, 2009). Additionally, from our empirical findings it is pretty clear that companies in the startup stage tend to keep organisational performance measurement system simple, often with only one type of measures. These measures are derived from company objectives for all three cases, which is in line with theoretical findings. Lazzarotti et al. (2011) claim that the measurement of R&D performance is a challenging task, since effort levels may not be easily observable, success is uncertain and influenced by uncontrollable factors, and it can be usually assessed only after long delays, and our empirical findings support completely this statement. All managers claimed that setting targets and evaluating performance is challenging and demanding task, and that is difficult to find perfect balance between challenging but at the same time achievable measures.

We could also observe that ownership has an impact on performance measurement system in the young growing companies. For instance, in Sol Voltaics the Board of Directors always makes a final decision when it comes to setting up technical milestones, and in MIP Technologies the mother company is revising targets.

All three companies are evaluating performance on the individual level as well, and managers are discussing targets, objectives and goals with employees once or twice a year.

Sol Voltaics has more formal procedures when it comes to measuring performance both organisationally and individually, and from this observation we can consider that firm size is also one of the factors affecting this aspect of management control. As the company is growing management is engaging more in measuring performance, and setting targets and deciding what and how to measure gets more attention. This phenomenon is closely related to centralisation as well, and we could observe that more centralised companies tend to have more formal approach to measuring performance.

We could not find relations between innovation capability and performance measurement system. On the contrary, relations between environmental uncertainty and performance measurement exist, and according to managers in the interviewed companies uncertainty has an impact on performance. This impact remains unclear, since it can be observed from different aspects, and therefore interpreted both positively and negatively.

Table 8 sums up the analysis of performance measurements of examined companies as a management control tool in association with potentially influential contingent factors.

Table 8 Performance measurement of respondents and contingent factors

	Environmental uncertainty	The degree of autonomy granted to employees	Ownership	Firm size	Organisational maturity	Innovation capability	Venture capital financing
Performance measurement	+	+	+	+	+		

5.1.6 Incentives (reward system)

Pursuant to our observations, all three case companies are using only financial incentives in the terms of the reward system. According to all three managers, intrinsic motivation among employees prevails, and financial incentives are not crucial for the company performance. This observation is partially in line with Baule and Soost’s findings who claimed that three key factors which are strongly connected and could be used to offer employees attractive workplace are: intrinsic motivation, non-financial incentives and social environment (Baule & Soost, 2016).

The theoretical findings about relations between type of tasks and intrinsic motivation are also supported by our empirical findings - employees in all three interviewed companies are performing very complex tasks and they are intrinsically motivated. From our interviews with the companies we can note that creating incentive plans in startup is not an easy process. One of our case companies even failed to create incentive plan for this year, and the interview was conducted in April. The problems while creating these plans occur due to many difficulties and obstacles that managers are facing in the process. Lack of personnel and suitable systems might be one of potential causes to these problems. If we observe factors that might influence these incentive plans, we can notice that size and the ownership relatively matter.

Moreover, we could observe that employees are not entirely satisfied with the existing incentive plans either, what was clear from Hansa Medical example. Lack of resources in terms of time and personnel is also one of the factors causing this problem. According to the literature, non-financial incentives are very important for intrinsically motivated people, and this shortage might be one of the reasons for employees not being satisfied. In other words,

what we also consider as an issue while creating incentive plans is complete lack of non-financial incentives. It is important to note that some interviewed managers did not know what type of incentives can be considered as non-financial.

On the other hand, long term incentives, present at Hansa Medical and Sol Voltaics in the form of options and shares are more interesting for employees. Investment possibility is used to engage people more and to assure their staying in the company.

Table 9 sums up the analysis of reward system of examined companies in association with potentially influential contingent factors.

Table 9 Reward system of respondents and contingent factors

	Environmental uncertainty	The degree of autonomy granted to employees	Ownership	Firm size	Organisational maturity	Innovation capability	Venture capital financing
Incentives (reward system)	+		+	+	+		

5.2 Informal controls

5.2.1 Cultural controls

Ouchi suggests replacement of formal controls with cultural controls in case if company operates in high-tech environment and employees deal with complex qualitative tasks as we could observe it in startups. Thus, Ouchi's "clan control" is well suited for startups as an instrument instilling shared values and social norms (Ouchi, 1979).

The knowledge-based high-tech environment is of the unpredictable in terms of outcomes for its participants. Establishment of strong cultural controls in order to create environment of commitment and congruence with organisational goals could secure startups and help to resist uncertainty.

Some of the studies note that shared cultural control is important category of control in organizations with decentralized organizational structure (Haustein et al., 2014). Taking into account that our respondents do not present decentralized organisational structure and high

degree of freedom of employees, it is possible that cultural controls are not as significant to them as it is discussed in literature.

Despite the fact that cultural controls are informal type of controls, with the company growth it could be difficult to unite people with different backgrounds under the common values. In order to maintain cultural intensity interviewed companies implement specific tools such as mission statement, regular team building activities and the system of different kind of incentives. The common view on the culture of all respondents is about knowledge sharing and self development. They believe that it makes the employees familiar with company's goals and motivates them to make an effort to achieve the desired outcome. This is not a short-term process and the expected behaviour and loyalty to the company comes to employees with a long period of time. During this period, the company could change the life cycle stage and become mature.

Research within the field of cultural controls states that it is more successfully implemented in companies with separation between ownership and management control (Haustein et al., 2014). The results of the study stay in line with this statement. We have not found the direct influence of the owners on cultural controls.

Table 10 sums up the analysis of cultural control of examined companies in association with potentially influential contingent factors.

Table 10 Cultural control of respondents and contingent factors

	Environmental uncertainty	The degree of autonomy granted to employees	Ownership	Firm size	Organisational maturity	Innovation capability	Venture capital financing
Cultural controls		+		+	+		

5.2.2 Recruitment process

Effective recruitment process is vital for the startups. Employees should be well selected and trained in order to be able to assess the possible impact of external uncertainty on internal processes and deal with unanticipated situations.

Ouchi raises the question about the necessity of selection and training programs to socialize new employees and achieve organizational goals (Ouchi, 1979). Davila confirms that firm size is positively related with the adoption of special personnel selection procedures (Davila & Foster, 2005).

Some researches argue that the employees' level of self-control contributes the implementation of formal recruitment process. In order to grant employees desired degree of autonomy, during the recruitment process, the company must make sure that candidates are able to take decisions in line with organisational goals and effectively fulfill it (Haustein et al., 2014). Therefore, it is expected that startups will increase focus on selection process of new employee and their subsequent education and development.

We found a contradiction between respondent's behaviour and researches opinion about necessity of implementation of specific recruitment procedures for careful selection of high skilled employees under conditions of complex technological environment of startups (Abernethy & Brownell, 1997).

Davila shows that the low concentration of ownership has a positive effect on recruitment process. He argues that founders of the company should be replaced by CEO, because they control current employees with their vision, but fail in transfer it to the new employees (Davila & Foster, 2005). Only information from Sol Voltaics confirms Davila's conclusion. The company has HR manager and special software is involved in the recruitment process. In other cases we discovered the lack of the sufficient procedures concerning recruitment process and subsequent training. The employees are mostly selected by using management's personal contacts.

In high-tech startup companies knowledge-based and committed based HR processes play a significant role on the growth of the company. It is expected that by the time steady procedure of personnel recruitment in form of list of requirements to candidate and training program will be successfully adopted, the company will become mature.

Venture capital financing is a factor with a strong influence on HR policies. Investors are interested in hiring key executive personnel. It has been shown by Davila that investors have a positive influence on replacement of the founder by CEO and a faster time-to-hiring of financial managers (Davila & Foster, 2005). The results of the current study are in congruence with Davila and Foster's vision, because Hansa Medical and Sol Voltaics both

have the Board of Directors, who represents investor’s interests and monitor their compliance in particular by hiring a CEO. MIP Technologies is accountable to its mother company.

Table 11 sums up the analysis of recruitment process of examined companies in association with potentially influential contingent factors.

Table 11 Recruitment process of respondents and contingent factors

	Environmental uncertainty	The degree of autonomy granted to employees	Ownership	Firm size	Organisational maturity	Innovation capability	Venture capital financing
Recruitment process		+	+	+	+		+

6. Concluding remarks

6.1 Contributions

6.1.1 MCS in the startup companies

The research on the MCSs in startup companies is limited, so this study makes a contribution to the literature by expansion the sample of examined case companies. We have attempted to deepen the knowledge about implementation and development of MCSs in the startup companies.

Startup companies experience difficulties balancing formal controls and the necessity of staying flexible, creative and innovative.

Some of the researchers suggest using the informal controls for companies involved in complex high-tech processes. Others say that it is inevitable that with the growth of the company informal controls should be replaced by more formal. Our study indicates the significance of finding the balance between both types of control in order to combine them for successful startup performance.

Despite the common view that formalisation of MCS negatively correlates with innovation, our results show that interviewed startup companies that successfully implemented variety of formal management control tools continue to perform and develop according to their strategies.

The opinion that hierarchical organisational structure is vital in order to provide flexible communication and encourage innovation is widely spread. Our findings suggest that centralized structure of decision making process does not have a negative effect on innovation outcome.

Standardisation in the form of introduction of rules and policies also does not interrupt the R&D progress.

Speaking about strategic planning, it is a base of determination of direction of company's development. We observed that in startups long term strategic planning is a subject of regular review and correction in a short term in comparison to established companies.

Budget for startup is effective and beneficial management control tool. It is a powerful instrument in order to insure that actions are taken in agreement with set goals and objectives

and employees are aware of it. Our findings demonstrate the possibility of usage of budget not only as a diagnostic tool, but also as an interactive one.

Startup companies have performance measurements in place, but at the same time aim to keep this system simple. Managers are focused on specific technical milestones for R&D progress and do not pay much attention on other processes as established companies usually do.

Our findings show that reward system in startup companies is quite weak. They have variety of financial incentives such as pay rise and bonuses, but struggle with implementation of non-financial incentives.

Moving to informal controls, organisational culture in its turn is an important part of MCS in startups. Human resources are a main part of value creating mechanism, because the performance of high-tech startups is knowledge based. Therefore, management of innovative companies supposed to apply more instruments in order to enforce cultural controls.

Competent personnel is, as literature maintains, a crucial requirement for startups. Moreover, each case company stressed the importance of hiring innovative and skilled people. On practice selection of personnel occurs mostly with the help of personal contacts which is not efficient. Standard HR procedure like announcement of the vacancy in open sources allows to consider several applicants and make a choice not only in favor of his or her qualification but also to take into account the congruence of the person's goals to the company's goals.

Since all the respondents are mature companies they have some traditions in place to initiate socialisation process and knowledge sharing, however, strong cultural controls have not been identified. Managers recognize the importance of this management control tool, but barely use it.

Management control systems in startup change over time, and are becoming more formal as company is growing. Companies tend to engage in using more formal management control tools and procedures while transforming into bigger firms.

6.1.2 Factors affecting the MCS in the startup companies

Our findings represent factors affecting MCSs in startups and explanation what kind of effect these factors could have.

According to our results the most influential factors of MCS implementation and development are firm size in terms of the number of employees, organisational maturity, ownership and degree of employees' autonomy.

Environmental uncertainty is extremely relevant for startups, because their unique high-technological product could experience obsolescence even before entering the market. It provides big risk for startup businesses, but we have not identified a heavy impact on MCS. Uncertainty should be taken into account mostly during planning, determining of PM and implementing financial incentives.

The degree of autonomy granted to employees have an impact on MCS of startup mostly on early stage, when the organisational structure supposed to be decentralised in order to make a creative atmosphere. The interviewed companies are already mature, have well defined destination to move in their R&D, so the high degree of autonomy granted to employees seems as a disadvantage for their performance and simultaneously the factor of low employees' autonomy has an impact on the increasing need for formal controls.

Concentration of ownership is a key factor in application of almost all of the management control tools. Owners "set tone from the top" in formal control usage. The more concentrated ownership is the more power the owner demonstrates in decision-making process.

Firm size is the most powerful contingent factor. It affects all the management control tools at the same manner. With the increasing of the number of employees the need in implementing the more formal control grows as well. This finding confirms the results of other studies mentioned above.

Organisational maturity has the same effect on MCS of startup as a firm size despite the fact this is different kind of contingent factor. The companies go through the numerous life cycle stages since its establishment. The discovery of Granlund and Taipaleenmäki that companies demonstrate a stronger emphasis on bureaucratic MCSs at the mature stage than in earlier growth stage is fully supported by our research since all of the studied companies are mature (Granlund & Taipaleenmäki, 2005).

Concerning the innovation capability we arrived to the conclusion that it should be always taken into account during the budget approval process. Ignoring this contingent factor could lead to creation of the rigid budget which limits company's ability to adapt to different kinds of unpredictable circumstances. It also encourages risk-averse behaviour which does not fit the startup's business character.

The last but not least contingent factor affecting the design of MCSs especially in startup is venture capital financing. We identified its strong influence on introduction of rules and policies, strategic planning and recruitment process. Due to the high investor's expectation, MCS instruments are designed in order to enhance successful performance of startup.

6.2 Suggestions for further research

This study described current use of MCS in startups and the factors which are influential for its implementation and development. This field is still largely unexplored further research is required.

Our findings show that respondents aim to adopt MCS using fragments of MC packages from the experience of established companies. There is a risk of using traditional management control tools without adjusting it to the specific conditions startup operates. It would be interesting if future studies could go in depth in analysing the impact of undertaking all the potentially required changes.

Moreover, our analysis also demonstrates the existence of problem with implementation of incentive plans and using of nonfinancial incentives. We believe that search of cause and effects of incentives in startups when it comes to motivation and performance in general could be a valuable contribution to the theory.

6.3 Limitations

Some limitations supposed to be taken into attention before application of findings to other situations.

The study is built on the basis of qualitative data received from the interviews with the managers in the companies. First of all respondents could present information from their point of view and thus the answers might not fully reflect the reality. Secondly, the given information has author's interpretation. As we have only interviewed one representative from two out of three companies, it is a risk that the respondent's perspective affects the results. Furthermore, the study is limited only to Swedish companies and Swedish conditions, which has an impact on the external validity of the study. Much information that we enquired was reported to be confidential, so from that reason some parts of the empirical findings can appear to be vague and possibly unclear. Lastly, we focused only on the startups and the small businesses, and by that we excluded other contexts from the analysis.

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Appendix 1

Table 1
The new venture community.

Institutional population	Mode of action	Goal for community participation
Startup firm	Entrepreneurship	Survival, legitimacy, success
University	Basic and applied research, technology transfer	Commercialization of technology, financial returns
Investor	Investment in startup firms	Financial returns
Established Firm	Investment in and/or R&D alliances with startup firms	Strategic—gain new knowledge, competitive advantage
Government agency	Basic and applied research, grant funding, regulation	Commercialization of technology, economic growth and development
Professional association	Providing professional services	Payment for services
Economic development group	Conferences, trade shows, other outreach activities	Bring jobs and economic growth to a particular industry or region

Appendix 2

Environmental uncertainty	External
Customer power	
Business strategy	Organisational
Technological complexity	
Decentralization	
Ownership dispersion	
Firm size	
Organisational maturity	
Innovation capability	
Venture capital financing	
Public funding	

Source: Haustein et al., 2014

Appendix 3

Interview guide

Company background

Q1: Short description of the company - its history, line of business and products?

Q2: Ownership?

Q3: What startup stage? (how many years operates)

Q4: Number of employees?

Q5: What are the biggest changes for the company along the development way?

Q6: What are biggest challenges for the company at the moment?

MCS

Formal management controls

Q7: Describe the organizational structure, has it changed over time?

Q8: Describe governance structure - how does the top management look like?

Q9: Describe briefly policies and procedures if there are any.

Q10. Who is involved in planning process - is it more often long term or short term planning?

Q11: Describe your MCS:

Q11.1: Do you use formal management control systems (e.g. budgets, balanced scorecard, performance measures, reward systems etc.) to support the development of the company? If so, who is involved in the process?

Q11.2: Are company goals financial or non-financial? Who is involved in this process?

Q11.3: How does the company evaluate its performance (individual, group, organisational)?

Q11.4: What are the organization's key performance measures deriving from its objectives, key success factors?

Q12: What do you do to motivate people? Do you perceive employees as intrinsically or extrinsically motivated?

Q12.1: What do you think people are looking for in this context?

Q12.2: What kind of financial and nonfinancial rewards do you use?

Q12.3: How do you feel about using these tools? Are they effective? Are they manipulative?

Q12.4: How important are the use of such management tools for the survival/success of a startup?

Q12.5: What company wants to achieve with incentive plans?

Q12.6: What specific improvements - behaviours and outcomes - would the incentive plan be designed to drive?

Q12.7: What kind of difficulties and obstacles is management facing while creating incentive plans?

Q12.8: What kind of difficulties and obstacles are employees facing in the context of behaviours and outcomes?

Q12.9: Do employees have what they need - the skills, experience, systems and support - to overcome these difficulties and obstacles? If not, what is lacking?

Q13: What level of uncertainty do you perceive for the company in the future? How does it affect motivation and performance? Is it influencing rewards and compensation?

Informal management controls

Q14: Do you use informal management control systems (e.g. culture, knowledge sharing, innovative working climate, social norms etc.) to support the development?

Q14.1. Describe your company culture - are there any subcultural groups or traditions in the company?

Q14.2. Describe company values - what is important while recruiting; is there any special values that person needs to have?

Q14.3. How about symbols - how does the office plan looks like?