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Exploring the Design and Use of Innovation Management Systems in Swedish Organisations

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Abstract

The last years have shown increasing investments made into innovation activities in Swedish organisations. However, a survey among top executives in 665 Swedish organisations showed that more than half of the respondents expressed that innovation work is not followed up on, implying that the investments made are not being optimally utilized. (Larsson et al, 2015). This development has underscored the need for more systematic innovation management practices, frequently referred to as Innovation Management Systems, as means for organisations to improve their innovation capability (CEN Standard, 2013). However, the design and use of Innovation Management Systems have thus far only been briefly examined in literature. Hence, this study aims to identify key factors of Innovation Management Systems as well as key management areas within each factor. The objective is to examine good practices within Swedish organisations, to analyse the key management areas and identify interactions between different factors.

This thesis is based on an extensive literature review, focused on factors displayed as vital to organisational innovation capability. Nine factors compiling the Innovation Management System were identified; *Organisational Context Management, Innovation Strategy, Innovation Culture, Innovation Performance Measurement and Management, Collaboration and Communication, IP and Knowledge Management, Resource Management, Front-end Innovation Process, and Back-end Innovation Process*. The study uses qualitative methods for collecting data. With an original population of 100 innovation managers, 12 prominent Swedish organisations displaying particularly good practices in one or more factor of the Innovation Management System were identified. The result from the 22 in-depth interviews is presented as case studies describing the background to the initiative, the practice implemented, and the results.

The main finding from the study is that interactions between the key factors have been identified further supporting the need for a more holistic approach to innovation management practices, an Innovation Management System. From exploring good practices within each key factor, the by literature expressed management areas have been assessed from an "importance to practice" perspective as well as new management areas detected. Hence, this study has provided an indication to what management areas organisations needs to address in the strive to increase the organisational innovation capability.

Keywords: Innovation Management Systems, Organisational Innovation Capability, Innovation Management

Table of Contents

1. Introduction

The introductory chapter describes the background of the thesis as well as the concepts of innovation capability, continuous innovation, and Innovation Management Systems. The aim of this chapter is to create a general understanding of the connection between the focal concepts, leading to the purpose of the thesis and five specific research questions. Further, the scope and limitations are discussed and the chapter ends by a description of the thesis disposition.

1.1. Background

Companies operating in today's markets are experiencing many challenges such as the globalisation of markets and technologies. In turn this increase the supply of products available to customers and consequently changes the competitive environment (Tidd, 2005). In order to thrive and prosper in this environment, companies need to differentiate their offerings from the ones of their competitors. Hence, the role of **innovations** is crucial in order to create a competitive advantage (Porter, 1980; Basoglu et al, 2013). Morris (2013) argues that every company has some form of competitive advantage, however, as markets change this degrades, forcing companies to innovate in order to maintain existing advantages or create new ones. Although innovations imply a competitive advantage to the firm it is only of temporary nature, particularly in technology intensive industries and in industries where differentiation and innovation is easy to imitate (Morris, 2013). This is because when the mainstream market accepts the new technology, the incumbent companies will be left too far behind and the entrepreneurial firms will dominate the market (Bower and Christensen, 1995; Levitt, 2004). Further, Teece et al (1997) argue that the winners in the global marketplace are the companies with the capability to, rapidly and flexibly, continuously innovate in response to changing market needs. Hence, firms have to develop the **innovation capability** needed to provide a steady, continuous stream of innovations (Grant, 1991). Innovation capability can be defined as the ability to transform knowledge and ideas into e.g. new products or processes, of high value to the customers or the organisation (Lawson and Samson, 2001).

Before further elaborating on **continuous innovation** there is a need to define the concept in question. *"Continuous innovation entails the search for new configurations in terms of product-market-technology-organisation in which the degree of newness goes from continuous improvement to radical change"* (Magnusson and Martini, 2008, 2). This definition implies that companies, concurrently, need to innovate in the two domains of continuous improvement and radical change (Day and Schoemaker, 2000). The lion's share of innovation management literature argues that these domains are widely different in terms of strategies and arrangements (see e.g. Ettlie et al, 1984). Hence, in order to be continuously innovative the company needs to possess the ability to simultaneously manage these two domains (Magnusson and Martini, 2008). However, although practically all companies innovate, few do so in a systematic and reliable way. Instead many innovations happen despite the organisation, rather than because of the organisation, following invisible development paths requiring individual acts of heroism and a large dose of serendipity (Anthony et al, 2014).

The last years have shown increasing investments made into innovation activities in Swedish organisations. However, a survey among top executives in 665 Swedish organisations showed that more than half of the respondents expressed that innovation work is not followed up on, implying that the investments made are not being optimally utilized. (Larsson et al, 2015). This development has

also underscored the need for more systematic innovation management practices, frequently referred to as **Innovation Management Systems**, as a means for organisations to increase their innovation capability in their strive to become continuously innovative and create sustainable competitive advantages (CEN Standard, 2013; Morris, 2011; Tuominen et al, 1999; Porter, 1980).

The notion of Innovation Management Systems is not new (see e.g. Damanpour, 1991), but despite the vast amount of research covering innovation management, the design and use of Innovation Management Systems have so far only been briefly examined in literature. The lion's share of innovation management literature focuses on process, product, or business model innovation, and as expressed by Montalvo (2004) most of these concepts emphasise on individual factors such as idea generation. However, some seminal works such as Van de Ven (1986), stress the importance of a holistic approach to innovation management, which incorporates all factors impacting the organisational innovation capability to maximize the organisational innovativeness. Following this line of reasoning, it appears as though there is a need to address how different innovation activities interact in order to improve an organisation's innovation capability. Damanpour (1991) further stresses the need to address multiple dimensions of innovation to improve the innovativeness of the organisational. Moreover, continuous innovation is a strategic and human process much more than a technological one, and is achieved from thoughtful repetition of the right methods (Morris, 2011). Hence, there is a need to examine good practices of innovation management within each part of Innovation Management Systems in order to establish fruitful methods.

1.2. Purpose

The above-mentioned importance of increasing organisational innovation capability and the current lack of a holistic approach to do so, implies a need for further knowledge about how to design, use, and evaluate Innovation Management Systems. Therefore, key factors of the Innovation Management System should be identified. Further, in line with Morris' (2011) reasoning there is a need to understand the methods used and how innovation is managed in practice, leading to the purpose of this thesis:

This thesis will identify key factors of Innovation Management Systems as well as key management areas within each factor. The objective is to examine good practices within Swedish organisations, to analyse the key management areas and identify interactions between different factors.

In order to address the purpose, the following research questions need to be answered:

RQ1: What are Innovation Management Systems and which are the key factors impacting the organisational innovation capability?

RQ2: What management areas can be identified, in each key factor, affecting the organisational innovation capability?

RQ3: How are the key factors managed in practice?

RQ4: How important are the identified management areas in practice and can any additional management areas be detected?

RQ5: Are there any interactions between the key factors implying synergies that affect the organisational innovation capability?

1.3. Scope and Delimitations

First of all, it is important to discuss the concept of Innovation. The concept includes new configurations of products, services, processes or business models. In this thesis, no distinction between incremental and radical innovation has been made. Further, there is a need to define Innovation Management Systems since, depending on researcher and perspective, different factors are included in the concept. This thesis will thus start with a literature review in order to define the Innovation Management System used, and hence our scope.

Further, the study is focused on Swedish organisations operating on a national or international market. The sample group are derived mostly from the list of members in the Swedish associations of interest; Innovationsledarna[1] and IMIG[2]. This implies that the individuals and organisations contacted have a genuine interest and focus on innovation management. However, the organisations chosen are of diverse nature when it comes to industry. This limits our ability to draw general conclusions due to the difficulties implied by comparing organisations across industries.

1.4. Disposition of Thesis

The thesis is organised in the following seven chapters:

Chapter 1:   Introduction **-** The background of the thesis is presented together with the purpose and scope.

Chapter 2:   Exposition of Theory - General theory emphasising on organisational innovativeness is discussed and key factors of the Innovation Management System used in this thesis are identified, hence answering research question 1. Following, the key factors are presented separately and associated management areas are highlighted. Lastly a summary of the management areas is presented answering research question 2, see table 1.

Chapter 3:   Method **-** Presents the methods used in the empirical part of the thesis. Further, the two sample groups are defined followed by a discussion about the validity and reliability of the study as well as a general method discussion.

Chapter 4:   Research Findings and Analysis - Firstly, the reflections from the screening process are presented, followed by the results from the cases studies. These are presented and structure as in the theory chapter, i.e. the results within each key factor are presented separately. The case studies is structured in a similar manner with a background, practice, and result part, and the identified management areas are highlighted. Hence, research question 3 is answered.

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[1] Innovationsledarna is an association of interest and the members pays an annual fee in order to participate in the organised events and discussions on the subject of innovation management.

[2] "Ideation Management Interest Group is a researched-based network that brings together researchers and practitioners working actively with ideation and innovation for cross-learning, presentation and discussion of research results, and to collectively pinpoint and act upon the red hot issues for ideation management research and practice." (LinkedIn, 2015)

Chapter 5: Discussion **-** The results are discussed separately in the key factors. The key management areas are highlighted and addressed from an importance to practice perspective and new management areas detected from the practices are added. Further, identified interactions from the results are discussed within each key factor.

Chapter 6: Conclusion - The results described above are concluded as an extension of the table compiled in the theory chapter, see table 2. Further, the interactions between the key factors are presented, see table 3. Hence this chapter answers research question 4 and 5. Finally, the theoretical and practical implications of this thesis are discussed.

Chapter 7: Further Research - Suggestions for further research are presented.

2. Exposition of Theory

This chapter will present the theory of Innovation Management Systems. With this as the point of departure, the Innovation Management System used in this thesis is defined. The Innovation Management System is divided into nine factors, sorted into four different categories, presented in figure 1. The factors are separately reviewed and presented, following the structure of the categories of the Innovation Management System. In all factors, key management areas are highlighted and finally summarised in table 1, see page 19. Hence, this chapter aims to answer research question 1: What are Innovation Management Systems and which are the key factors impacting the organisational innovation capability?, and research question 2: What management areas can be identified, in each key factor, affecting the organisational innovation capability?.

2.1. Innovation Management Systems

Innovation Management Systems comprise several interrelated components; exploration of customer needs and market trends; taking strategic action based on new insight as well as the company's vision and objectives; and managing and controlling the operational actions taken to develop and present the innovation to the market (Morris, 2011; Tuominen et al., 1999; Sundbo, 1997). Further, Van de Ven (1986) stresses that an organisation designed for innovation needs to integrate the essential functions, organisational units, and resources needed to manage an innovation throughout the entire value chain. In line with this reasoning, the CEN Standard (2013) states that Innovation Management Systems should include all activities required to improve the company's innovation capability and hence increase the chances to generate innovation on a continuous basis. Anthony et al. (2014) stress that the important link between ad-hoc innovation and being a continuous innovation factory is the setup of Innovation Management Systems.

The purpose of Innovation Management Systems is to provide guidance to introduce, develop, and maintain systematic innovation management practices to increase an organisation's innovation capability so that it can achieve greater success with innovations (CEN Standard, 2013). However, the design and use of Innovation Management Systems have this far only been briefly examined in literature. Hence there is a need to turn to innovation management literature emphasising different aspects of innovation capability in order to narrow down the key factors of Innovation Management Systems. Through a review of such literature, nine key factors have been identified. Below these are highlighted as well as briefly presented, and their impact on organisational innovation capability is discussed.

Key Factors of Innovation Management Systems

As the globalised competitive environment is changing, the traditional balance between customer and supplier is changing towards becoming more customer-centric. Bower and Christensen (1995) argue that customers are key to consider aligning company investments in innovation with market needs. However, information about the environment is not solely covered by customer insight but also needs to consider e.g. political or technological changes implying new business opportunities (CEN Standard, 2013). Hence, to increase the organisational innovation capability and assure greater success from innovation, the organisation needs to develop systematic practices for **Organisational Context Management**.

Successful innovative companies manage to focus their innovation efforts and resources to identified needs and thereby the company's short and long-term goals (Anthony et al, 2014). This implies that there is a need for an **Innovation Strategy** to work as a framework, guiding the company from identified needs to commercialised innovations in a systematic and continuous manner (Sundbo, 1997).

In line with Morris' (2011) reasoning about continuous innovation being more of a strategic and human process than a technological one, the organisational culture needs to be managed when addressing the innovation capability of an organisation. Herzog (2011) argues that organisations' innovation success is strongly related to the organisational culture or more specific, the **Innovation Culture**.

Innovation, like any other part of a business involving investments, needs to be measured in order to be managed (Morris, 2008). Further, Morris (2008) argues that the results from the **Innovation Performance Measurements** should be used as a learning process in order to continuously increase the organisational innovation capability.

Basoglu et al (2013) argue that communication between employees and companies facilitates information flows, essential to the innovation activities. When people interact with other people, both the number of high-quality ideas and the diffusion of these ideas increase (Björk and Magnusson, 2009; Basoglu et al, 2013). In this line of reasoning, it can be argued that **Collaboration and Communication** works as a catalyst to innovation and hence needs to be managed to increase the innovation capability of the organisation.

According to Teece et al (1997), the innovativeness of a firm is reflected by the capabilities possessed by the firm. The term capabilities refer to human competencies as well as how organisational skills and resources are adapted, integrated, and reconfigured. Hence, there is a need to address the question of **Resource Management** to increase the organisational innovation capability.

Another challenge facing innovative organisations is how to capture the value stemming from the innovation. To appropriate the returns from innovation, organisations need to exclude others from imitating the innovation. (Pisano and Teece, 2007). To assure excludability, intellectual property rights, IPR, can protect goods and practices. However, knowledge is a non-excludable good and hence reinforces the risk of other companies "free-riding" on the company's innovation. (Kim and Mauborgne, 1999). Hence, organisations striving to be successfully innovative need to focus on **IP and Knowledge Management** to fully appropriate the returns from their innovation efforts.

Lastly, many scholars argue that there is a need for a well-defined innovation process to achieve innovation success (see e.g. Tidd, 2005). The innovation process is in literature defined in many ways; however in most cases the process is defined as a sequence of events. Garud et al (2013) argue that the innovation process consists of the three phases; invention, development, and implementation. In line with this reasoning, the innovation process can be defined by the two phases; **Front-end Innovation Process** and **Back-end Innovation Process**. This definition aims to address the actions taken to search for new business opportunities, develop innovations, and lastly, commercialise the innovation.

Identified Key Factors of Innovation Management Systems

In line with the reasoning above, the identified key factors of the Innovation Management System that needs to be managed to increase the organisational innovation capability and achieve greater success from innovation are; **Organisational Context Management**, **Innovation Strategy**, **Innovation Culture**, **Innovation Performance Measurement and Management**, **Collaboration and Communication**, **IP and Knowledge Management**, **Resource Management**, **Front-end Innovation Process** and **Back-end Innovation Process**.

The key factors included in the Innovation Management System are sorted into four categories; external, organisational, enabling, and process factors, see figure 1. The purpose of sorting the different key factors into these categories is to visualize the factors' role in the Innovation Management System. The process factors; Front-end and Back-end Innovation Process, include all activities needed on a daily basis to turn an idea into an innovation. These are the only factors in the Innovation Management Systems where specific input are refined to output. The enabling factors support the activities in the innovation process to increase the chances of successful innovation and affect the innovation work on a daily basis. The enabling factors are; IP and Knowledge Management, Innovation Performance Measurement and Management, Collaboration and Communication, and Resource Management. The organisational factors, namely; Innovation Strategy and Innovation Culture affect the entire company and should be controlled by top management. This implies that choices made in this category set the scope of innovation activities depending on e.g. the risk willingness, business objectives, and commitment to innovation activities. Moreover, all the above-mentioned categories are within the organisation's control. However, the external factors, only incorporating the Organisational Context Management, are beyond the control of the organisation and are the connection between the company and the outside world. The external factors both presents new innovation opportunities and threats, as well as determines the commercial success of the innovation.

In line with the above, the organisational factors imply work of a long-term nature while the enabling and process factors are characterised by day-to-day actions. The external factors, on the other hand, present opportunities of both short and long-term nature to the organisation. Further, as visualized by the dotted lines between the categories, the system is dynamic and information flows in both directions between the categories. All factors are further elaborated on separately below.
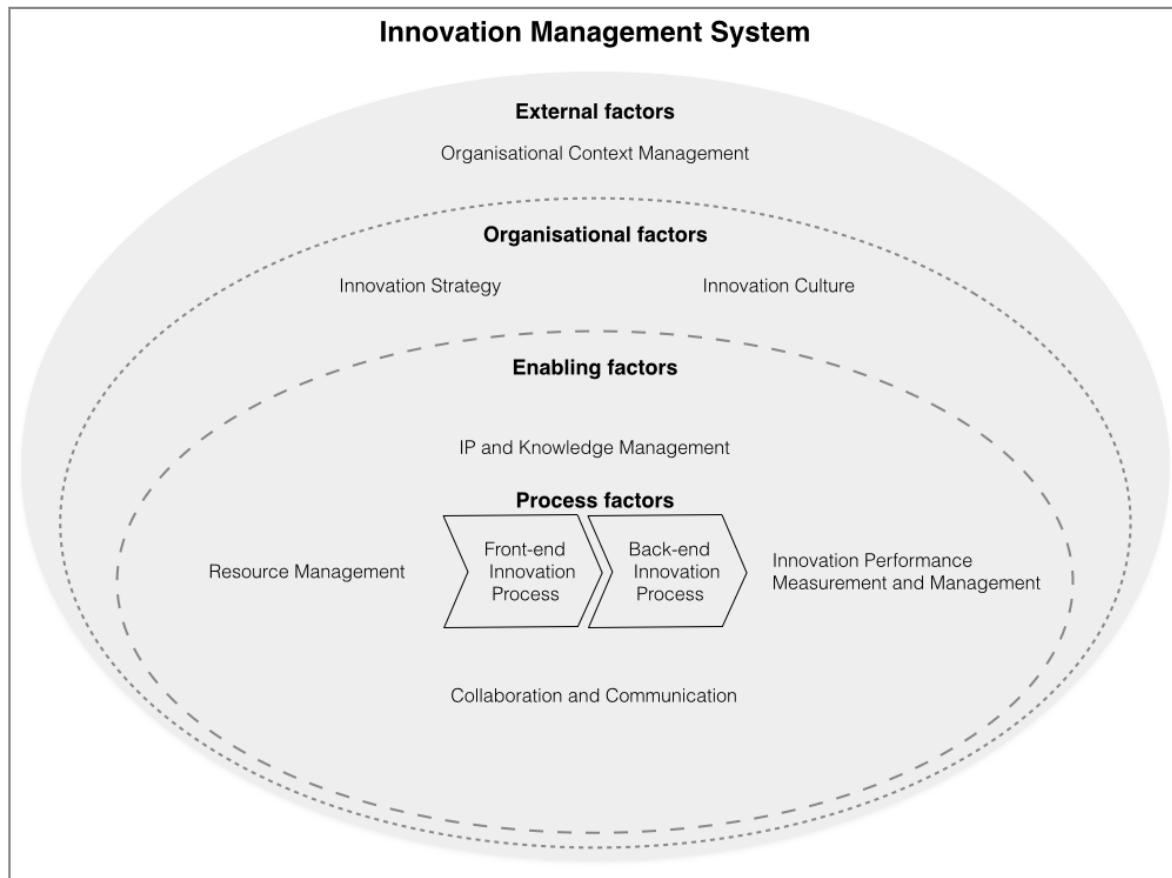
Figure 1: *Visualisation of the Innovation Management System consisting of key factors in four categories; external, organisational, enabling, and process factors.*

2.2. External Factors

The external factors, in this thesis including Organisational Context Management, present both new innovation opportunities and threats, as well as influence the commercial success of innovation. Therefore there is a need to collect, analyse and communicate information about the business environment throughout the organisation. Below the theory of the factor is presented and the key management areas highlighted.

Organisational Context Management

Understanding the organisational context in which the company operates is of great importance to be successful since sustained company growth is dependent on how the company defines their business purpose and manages to meet the needs of the customers (Levitt, 2004). However, customers have different needs and the company cannot effectively satisfy a too wide range of them. Hence there is a need to pinpoint the most important customers and market segments (Shipano, 1988). In order to deliver on the customers' needs, many scholars emphasise the importance of **customer insight** when innovating (Abernathy and Utterback, 1978; Bower and Christensen, 1995). Customer insight can be defined as the expressed desires pronounced by the customers (Slater and Narver, 1998).

The importance of customer insight to innovation is further supported by Morris (2013), however, he argues that customer insight foremost support incremental innovations. In line with this, Ulwick (2002) argues that customers should not be trusted to come up with solutions, since they do not possess the skills or expertise needed to deliver solutions of true value. Due to unexpressed needs,

8

listening to customers is not sufficient in order to truly understand what they try to achieve when using the product or service (Ulwick, 2002). Therefore, in order to gain insight on breakthrough innovations there is a need to dig deeper by e.g. observing the customers' behaviours. This is further supported by Abernathy and Utterback (1978), who argue that most radical product innovations rely heavily on deeper **customer understanding**. Hence, understanding customer behaviour is of great importance in order to deliver innovations of high value to the customer.

Yüksel (2012) stresses that a company must take the environment, within which it operates, into account and formulate a strategic approach to handle macro environmental events, occurrences and operations. The concept of environment includes all aspects related to activities within the company and can be both internal and external. The external aspects, in focus here, are beyond the control of the company, which still are relevant and affect the company. (Yüksel, 2012). In line with the above, Daellenbach et al (1999) argue that top managers need to consider external aspects when making investment decisions. Hence, information given by the business environment is not solely covered by customer insight but there is also a need to consider changes in **political, technical, economical, and social aspects**, which might imply new business opportunities (CEN Standard, 2013).

Abernathy and Utterback (1978) argue that in order to address the environmental changes, the new information needs to be spread and understood in the entire organisation. Van de Ven (1986) further stresses that all unit members should be responsible for the environmental scanning and consequently understand and have access to this information. How a company uses the information given by the business environment and learns to **adapt to this information** may be the only sustainable competitive advantage (Stata, 1989).

2.3. Organisational Factors

The organisational factors affect all parts of the organisation by setting the scope of innovation activities. In this thesis the organisational factors include Innovation Strategy and Innovation Culture, which will be presented below. The identified key management areas within each factor are highlighted.

Innovation Strategy

According to Kim and Mauborgne (2004), building strategy on competition will only lead to incremental improvements since these strategies assess what competitors do and strive to make it better. In the changing environment of e.g. expanding globalisation, companies need to innovate as well as to improve the creation of systematic and result-oriented knowledge in order to grow (Abraham and Knight, 2001). An organisational strategy should therefore describe a set of decisions needed to allocate resources against demand, constraints, and opportunities in the business environment that distinguishes the organisation from its competition, providing a sustainable competitive advantage (Tushman and Anderson, 1997). Strata (1989) stresses the importance of understanding the conditions of the total environment when making strategic decisions, since decisions based on local information can be counterproductive to the system as a whole. In order to outperform competitors, companies must break out from the competitive and imitative trap and strive to cultivate value innovation by emphasising customers, not competitors (Kim and Mauborgne 2004; Govindarajan and Trimble, 2007). Strategies should hence **focus on value innovation**, making competition irrelevant by offering new and superior buyer value (Kim and Mauborgne 2004).

On the other hand, Grant (1991) argues that an external focus does not provide a good foundation for formulating long-term strategy since the environment is continuously changing. A more stable base is

therefore to **focus on the firm's internal resources and capabilities** (Grant, 1991; Prahalad and Hamel, 1990). Barney (1991) takes a wider perspective and argues that strategies need to exploit internal strengths when responding to external opportunities in order to achieve a sustainable competitive advantage.

Successful innovative companies tie their innovations to their short and long term growth goals, meaning that they focus their innovation efforts and resources on a smaller number of strategic opportunity areas (Anthony et al, 2014). Hence, the innovation strategy is to be considered as a framework, guiding the company towards systematic and continuous innovation (Sundbo, 1997). Strategic innovation should **link resources and innovation efforts to an overall business strategy** which; encourages value creation and innovation activities, seeks to create and expand markets, and supports emerging businesses (Abraham and Knight, 2001; Anthony et al, 2014). Abraham and Knight (2001) argue that there are five factors that provide the essential foundation for strategic innovation, namely; concentration of aims, freedom of action, creative tension, spreading of resources, and genetic diversity.

Innovation Culture

The superiority of an innovative firm does not come from a specific invention but from the leaders' ability to foster an organisation that can learn from mistakes, faster, more efficiently, and more consistently than competitors (Furr and Dyer, 2014). Hence, a company's success with innovation is strongly related to their organisational culture (Herzog, 2011). An innovation culture can be defined as; **organisation-wide basic values which support innovation, organisation-wide norms for innovation, and perceptible innovation-oriented practices.** In addition, the culture should; encourage risk taking, openness to new ideas, tolerate failures, foster learning etc. (Herzog, 2011)

According to Van de Ven (1986) human beings and organisations, by nature, focuses on existing practices and harvest rather than to pave new directions. This is due to humans' physiological limitations when handling complexity and uncertainty. Thus managers need to figure out a way to **trigger individuals to innovate** (Van de Ven, 1986). When managing innovation it is important to create a culture characterised by openness, where people share their ideas and elaborate on each other's to jointly develop innovations (Isaksen and Ekvall, 2010). In line with this, Ambile (1997) argues that it is essential for managers to create a work environment that lowers the barriers to innovation and foster the stimulants to the employees' creativity in order to increase the organisational innovation capability. From an employee's point of view, there are benefits from participating in the innovation activities such as enjoyment and learning obtained from participation in the project and reputational gains from high-quality contributions (Raasch and von Hippel, 2013).

Further, **top managers' commitment** to innovation is an important aspect of organisational innovation capability, since they e.g. make decisions regarding R&D investments. This is supported by the correlation between low innovation performances and low investments in R&D (Dallenbach, 1999). Montalvo (2006) argues that top managers' commitment and attitude can be derived from the perceived social impact of the innovation and the perceived economic risk including gains and losses. It can also be argued that there is a link between the managers' perceived control of technological or organisational change and the firm's willingness to innovate. The behaviour among the managers is closely linked to their positive and negative beliefs and is likely to reflect the engagement in innovation activities throughout the company. Additionally, the attitude among employees towards innovation reflects the degree of which the firm's managers approve or disapprove of different aspects in innovation activities. (Montalvo, 2006).

Hellman and Thiele (2011) states that innovation in established organisations is often derived from employees taking initiatives beyond their original job description, mostly because they are the first to identify new opportunities. On the other hand, Van de Ven (1986) argues that people must be put out of their comfort zone in order to pay attention to new ideas. They should hence experience personal confrontation with problems, opportunities, and threats in order to recognize the need for innovation. Since the internal innovation process often clashes with the firm's established production and management process, there is a need for an **incentives model for employees** torn between the execution of planned activities and unplanned innovation work (Hellman and Thiele, 2011). In order to motivate innovation work the incentive system must have room for failure, meaning that it tolerates or even rewards early failure, but also rewards long-term success with path dependent compensation (Manso, 2011).

2.4. Enabling Factors

The enabling factors support the activities in the innovation process to increase the chances of successful innovation and affect the innovation work on a daily basis. In this thesis the enabling factors are; Innovation Performance Measurement and Management, Collaboration and Communication, IP and Knowledge Management, and Resource Management. These are presented below and the associated management areas are highlighted.

Innovation Performance Measurement and Management

Innovation, like any other part of a business that involves investments, **needs to be measured** (Morris, 2008). However, there are problems with measuring innovations since innovation is a venture into the unknown and the unknown cannot be measured too early in the process. As a testament to this, Eagar et al (2013) showed that less than 20% of the 80 large organisations examined in their study believe they have a good innovation measurement capability although there is a clear correlation between innovation measurement and innovation success. On the other hand, inadequate measurements might instead inhibit necessary capabilities, such as the spirit of learning, discovery and intelligent risk-taking (Morris, 2008). One of the biggest problems with measuring innovations is the abundance of approaches and tools available, e.g. number of ideas funded, return on investment, CEO commitment, and long-term customer adoption. However, there is none that is sufficient to truly capture the overall progress in innovation. (Mankin, 2007).

In an attempt to generalize the innovation performance measurement, Avlonitis et al (1994) suggest that organisational innovativeness should be assessed based on a five-factor model. The five factors, used to determine the overall innovativeness of the organisation are; technological innovation challenges, manifested strategic innovation intentions, innovativeness of products, innovativeness of core machinery, and innovative leadership. These factors span from assessing the newness of the innovation to top management's commitment to innovation. In another attempt, Mankin (2007) provides a recommendation on when and how to use different measurements by grouping them into four different approaches, namely; result-based measures, process measures, project measures, and portfolio measures of innovation performance. In turn, Morris (2008) argues that return on investment, ROI, can be sufficient to measure incremental innovations in a well-understood market. However, he points out one big problem with ROI, it drives organisations to assess the idea in an early stage which might lead to decisions based on optimism instead of realism. Further, Nilakanta and Subramanian (1996) argue that a truly innovative company is one that consistently over time exhibits innovative behaviour and hence should every valid measure of innovativeness capture this temporal dimension. However, the above mentioned measurement concepts and actions taken to

evaluate organisational innovativeness further illustrates that academia yet has not agreed upon best practice for assessing organisational innovation performance.

The close link between business performance and organisational innovativeness implies a need for organisations to become more innovative by building on past knowledge and experiences (Stata, 1989). Moreover, Morris (2008) stresses that the results from measuring innovations should be used as both a learning process itself and a process to improve learning i.e. **learning about learning**. Hence, to continuously increase the organisational innovation capability, companies need to address the problems of measuring innovation in order to enhance their business' performance.

Collaboration and Communication

Van de Ven (1986) argues that innovation is not an individual activity but rather a collective achievement. He means that an **idea created by a single individual should be shared** with other people with diverse skills, resources, and interests since a single idea expressed to others proliferates into multiple ideas. To turn an idea into an innovation, the new knowledge needs to be made explicit and shared with other members of the organisation (Björk and Magnusson, 2009). Therefore, there is a need for a network-building effort around creation, adoption, and sustained implementation of ideas among people, both within and in the larger context of the organisation (Van de Ven, 1986; Björk and Magnusson, 2009). However, it is common that information-exchanging activities occur only in between established contacts, which limits the scope of the information flows. Therefore the interdepartmental relationships among employees after hours should increase in order to increase the employee's social network and hence their access to information. (Basoglu et al, 2013). This is further supported by Björk and Magnusson (2009), who argue that the number of high-quality ideas generated by individuals increase when the individuals interact with other people. Therefore, arenas and meeting points should be created where individuals can exchange information and knowledge.

Innovation implies change, which affects people differently; some see an opportunity and welcome it while others see it as a threat and therefore oppose the change. Therefore, a leader should **facilitate change through communicating** effectively by painting an alluring picture of the future, generate enthusiasm and persuade people to collaborate and share information. (Anonymous, 2006). Communication is hence used in order to change and direct behaviours (Basoglu et al, 2013). Further, Basoglu et al (2013) argue that communication can facilitate idea generation, be a catalyst for increasing the diffusion of ideas and positively influence the customer. Communication facilitates information flows, which is essential for innovation activities.

Communication can reduce uncertainty and decrease resistance to innovation. However, how successfully an organisation can implement or develop new innovations depend on three components; power, complexity, and risk. The power component relates to the communication channels used to induce the new innovation while the other components refer to the complexity and risk associated to the innovation per se. Some combinations of these components can overload the available communication channels and hinder the implementation or development of new innovations. This implies that organisations' success to implement and develop new innovations is strongly determined by the amount of resources spent on organisational communication, hence the **cost of communication**. (Fidler and Johnson, 1984).

Open innovation implies that firms **should use internal as well as external ideas** and paths to market (Chesbrough, 2004). Chesbrough and Appleyard (2007) argue that open innovation, facilitated by external relationships, can produce superior products relative to products produced by a smaller number of individuals from a homogenous group. Collaboration of external nature can for example be relationships between the firm and customers, society or competitors. Collaboration with customers is significantly positive related to innovation performance, since e.g. customer involvement helps to understand customers' needs (Brettel and Cleven, 2011). This is further supported by Von Hippel (1978), who argues that customer involvement is of great importance in order to explore ideas from external sources. Further, Brettel and Cleven (2011) argue that in addition to customer collaboration, collaborating with suppliers and universities has a positive effect on the innovation performance. Firms with a high technological competence often have a strong cooperation with scientific agents, such as universities (Vega-Jurado et al, 2008). In line with this, it can be argued that external collaboration, open innovation, is important since all organisations have something to learn from others (Huizingh, 2011). However, there are no significant positive relationship between innovation performance and collaboration with competitors or independent experts (Brettel and Cleven, 2011).

According to Li (1995), creating trust and a shared vision is of the essence to facilitate knowledge transfer in inter-organisational relationship; hence it is of great importance when striving to exploit open innovation. To achieve fruitful collaborations, qualitative communication is of great importance since it enables collaborating partners to create shared values and understanding (Mohr and Spekman, 1994). In line with this, Basoglu et al (2013) argue that communication is of the essence to form loyal relationships between collaborating parties.

There are issues of how to capture and sustain value from open innovation initiatives. Dahlander and Gann (2010) highlight some disadvantages with open innovation such as **costs** of; coordination, maintaining relationships, and protecting the ideas. Further, open innovation might imply costs related to the risk of a participating party acting opportunistically in bad faith (Dahlander and Gann, 2010).

IP and Knowledge Management

In companies' strive of becoming more innovative they are facing many challenges. One of the most perplexing challenges is how to capture the value stemming from innovations (Pisano and Teece, 2007). Insufficient value capturing from innovation will not only hurt the focal enterprise but society at large since this, over time, will lead to lower investments in R&D and innovation activities. In order to fully **appropriate the returns** from the invested resources, an organisation needs to be able to exclude others from imitating the innovative idea (Pisano and Teece, 2007). Excludability is a function of both the legal system as well as the nature of the good (Kim and Mauborgne, 1999). Goods and practices are protected by property rights while knowledge is non-excludable and hence reinforces the risk of other companies "free-riding" on the organisation's innovation (Kim and Mauborgne, 1999). Grant (1991) further emphasises the innovative organisation's dependence upon skills and knowledge, possessed by highly trained employees. Where property rights are not fully defined, as is the case for knowledge, the issue of appropriating the returns from invested resources is raised (Grant, 1991). However, the harder these competencies are to imitate, the more likely is the organisation to appropriate the returns from the investments made (Teece et al, 1997). An IP strategy can also serve the strategic intentions and motivations of the company by appropriating the returns from innovations. (Peters et al, 2013). As is concluded by Blind et al (2006), patents, as part of the IP strategy, can further serve to improve the reputation of the company, strengthen the company's position in negotiations with other companies, as well as measurement index of the performance of

the company's R&D employees. Further, there is a trend of companies building large patent portfolios resulting in increased costs of innovation in the entire economy (Blind et al, 2006; Reitzig, 2007). In line with this, more IP protection and stronger barriers are not always the best way of appropriating the returns from the innovation (Pisano and Teece, 2007; Peters et al, 2013).

To secure a company's access to technological knowledge, creating **freedom to operate** with support by IPR, is important (Peters et al, 2013). This can also be done by pushing innovation into the public domain and hence push the envelope of what is novel. Companies can establish boundaries of what can be within private IPR and by doing so assure freedom to operate. This is known as strategic disclosure and should be an integral part of IP management. (Peters et al, 2013).

To increase the innovation capability an organisation must supply and create knowledge and ideas, as these are the primary inputs to value driven innovation (Kim and Mauborgne, 1999). Although organisations must strive for knowledge sharing and creation, these actions cannot be supervised or forced. According to Kim and Mauborgne (1999) these actions tend to happen only when individuals cooperate voluntarily. **To create incentives for employees to share their knowledge and insight**, patenting can be a useful tool (Blind et al, 2006).

Resource Management

An organisation is a complex human system and the expertise in organisational design is a critical skill to increase the organisational innovation capability (Strata, 1989). In this line of reasoning, Van de Ven (1986) argues that people are the ones that develop, carry, react to and modify ideas. Their actions are a result of their backgrounds, experiences and activities that occupy their attention. Therefore, new initiatives should start with composing the team itself by allocating people with varied backgrounds, **managing human competences** (Furr and Dyer, 2014). There is a significant positive relation between internal knowledge resources and innovation performance. However, increased innovation performance is not guaranteed by possession of knowledge resources, the resources has to be integrated and managed in order to increase the innovation capability of the firm (Urgal et al, 2013).

Furr and Dyer (2014) point out the importance of **time for innovation**, and that some successful innovative firms have allowed employees to allocate 10-20% of their time to innovation. However, it is not a particular amount of time that is needed but dedicated time blocks of "uninterrupted time" for innovation. This because associational thinking that leads to new insight, and hence innovations, are more likely to happen when the mind is absorbed with a particular challenge. However, without complementary resources, e.g. technological resources, the innovation process will be slow and the barriers to innovation too great. (Furr and Dyer, 2014).

According to Teece et al (1997), the capabilities of a firm reflect the innovativeness of the organisation and how well it addresses rapidly changing business environments in order to achieve a sustainable competitive advantage. However, the term "capabilities" does not solely refer to human competencies but also to how organisational skills and resources are adapted, integrated and reconfigured (Teece et al, 1997). Grant (1991) further develops the concept of resources and proposes a classification of six major categories in order to ease the identification of an organisation's resources. The suggested categories are; financial-, physical-, human-, technological-, reputational-, and organisational resources. However, innovation performance is not solely dependent on the amount of resources spent on innovation, how these resources are allocated is also of great importance. Breadth and intensity in resource allocation leads to increased innovation performance

especially regarding radical innovation. The effect is stronger when the resources are allocated selectively in the later stages of the innovation process and if the portfolio is more ambitiously innovative. (Klingebiel and Rammer, 2014). In line with this, the organisational capability of evaluating, redirecting, and cancelling projects is of the essence in order to **reallocate resources**. (Furr and Dyer, 2014)

2.5. Process Factors

The process factors, Front-end and Back-end Innovation Process include all activities needed to develop ideas into innovations. To define the process factors there is a need to first discuss the innovation process and included activities per se. Following, the factors are elaborated on separately and key management areas highlighted.

Innovation is the process of coming up with good ideas and the process of growing them into practical use (Tidd, 2005). To make the process flow, some forces are required; market eagerness, inventors' ideas, planners' vision, corporate pressure for growth, and investors' eagerness to obtain capital gains (Gross, 1972). The innovation process is in literature defined in many ways; however, most defines the process as a sequence of events. Garud et al (2013) conceptualize innovation as the emergence of novel ideas, the development of ideas, agreements such as manufacturing and supply chain, activities such as marketing and servicing, and lastly implementation. The innovation process is therefore defined as a sequence of events that unfold during the phases; invention (emergence of an idea), development (the elaboration of the idea), and implementation (the widespread acceptance of the innovation) (Garud et al, 2013). However, Tidd (2005) defines innovation as the core process of organisational renewal, of what the organisation offers, and how it creates and delivers these offers. The process is divided into four steps; searching, selecting, implementing and learning (Tidd, 2005). Further, the "innovation funnel" is another typical example of the innovation process and can be described as; framing and insight generation, idea management, development of projects, protection and exploitation, and market introduction (CEN Standard, 2013).

As shown above there are many examples of how to divide and name the different phases of the innovation process; however, the process contains similar practices and the differences are in the name. In the following section the innovation process will be defined in two phases; Front-end and Back-end Innovation Process. The former consists of idea management and development of the innovation projects and the latter of protection and commercialisation of innovations.

Front-end Innovation Process

The point of departure for the innovation process is usually customers, competitors and market possibilities (Sundbo, 1997). This is especially the case for radical innovations that tend to originate from the environment. In order to succeed with creating a sustainable competitive advantage from innovations, the early stages of the innovation process is of great importance since it determines the direction of all new products. (Reid and De Brentani, 2004). The first step in the Front-end Innovation Process is idea management, which in the Innovation Management System standard (CEN Standard, 2013) includes the generation, capturing, evaluation and selection of ideas.

There are two ways of generating ideas, demand pull i.e. people invent to solve existing problems or technology push i.e. "invention is the mother of necessity" (Garud et al, 2013). As a testament to this, Tidd (2005) argues that the first phase of innovation is detecting signals from the environment and emphasises the two different paths of emergence: pull or push. According to Tidd (2005) the **ideation phase** starts by combining new and existing knowledge, internally or externally, in order to create a

solution to the problem. In order to generate more ideas, individuals need to interact with others to exchange information and knowledge (Björk and Magnusson, 2009). However, there is a balancing act since a too large network may inhibit idea generation.

Even though all great innovations start with a great idea, improving innovation does not come from generating more ideas but instead from implementing the ideas more effectively (Kastelle and Steen, 2011). This is further supported by Björk and Magnusson (2009), who argue that good ideas is not necessarily connected to generation of a larger number of ideas, instead many ideas implies an increased cost for handling the ideas. Further, Hansen and Birkinshaw (2007) argue that innovative ideas will not prosper if the organisation does not possess strong screening and funding mechanisms. Therefore, the **selection phase** is important in order to reduce risks and decide which ideas are worth investing in to increase the chances of the innovative idea being commercialised (Tidd, 2005).

Innovation begins with an idea but in order to create value the idea must be pursued. Generating the idea is the easy part, finding a person with the knowledge and expertise to pursue the idea is more difficult (Gaynor, 2012). **The development phase** of innovation projects means setting up a methodology in order to develop the innovation (CEN Standard, 2013). This is further supported by Tidd (2005), who argues that there is a need to develop a clear strategy for realizing the concept, including acquiring the resources needed, and getting the innovation ready for final launch.

Furr and Dyer (2014) address the issue of unsuccessful innovation projects and stress the importance of **evaluating the results** honestly and if necessary change direction of, or sometimes even cancel, the project. However, Keegan and Turner (2002) argue that evaluation of innovation projects, by strictly pre-defined criteria, has a tendency to stifle innovation and implies a risk of cancelling innovation projects that do not quickly show positive results. Instead they propose that evaluation of innovation projects must embrace the uncertainty and risk implied by such projects.

Back-end Innovation Process

The Back-end Innovation Process includes the activities undertaken to protect and implement the innovation (CEN Standard, 2013), in other words the commercialisation of the innovation. Chesbrough and Rosenbloom (2002) argue that the value of innovation remains latent until it is in some way commercialised. How the innovation is commercialised will determine how well the company will capitalize from it. In order to capture the full value of the innovation, the company faces the challenge of **matching their business model to the circumstances** of the technology and the market opportunity (Chesbrough and Rosenbloom, 2002). However, in some cases, the business models employed to other products or services by the company cannot be successfully employed to the innovation. To overcome the problem of having contradictory business models and cultures applied to different products and services, some companies have chosen to commercialize their innovations in new ventures. However, as pointed out by Garvin (2004), these ventures tend to have a rather short life span of only four to five years on average and are therefore not to consider as a preferable way to commercialise the innovation.

As proposed by Christensen et al (2007) people "hire" products to perform a certain job. This insight implies that customers are not willing to pay for features not delivering on the job it is hired to do (Emmons et al, 2012) and hence the adoption rate of the product is determined by how well it performs on the job. On this line of reasoning, Rogers (1983) argues that crucial to how much value the company will be able to capture from the innovation is the rate of adoption. He highlights five characteristics, which are decisive to the rate of adoption, namely; the relative advantage,

compatibility, complexity, trialability, and observability. These characteristics answers the questions of value proposed to customers, compatibility to how people are doing things, customers' understanding of the innovation, possibility to try the innovation on customers in small doses, and the possibility to watch the customers using the innovation. In line with this, Chesbrough (2010, 360) argues that companies need to undertake active tests on "real customers paying real money in real economic transactions" in order to **validate their business model's potential**. The employed business model defines the manner of how the company will deliver value to customers, appropriate the returns from the innovation, and turn these returns into profit. The business model hence reflects the management's hypothesis of what customers want and how they want it to be delivered. (Teece, 2010). Many companies invest extensively in exploring new ideas, however, most companies have little or no ability to innovate their business model, which is decisive to how the innovation will be perceived by the market (Chesbrough, 2010).

2.6. Summary of Key Management Areas

In the literature review the key factors have been treated separately, and important theory within each key factor has been presented. In order to pinpoint important management areas, identified from the literature, the authors have compiled the following table, see table 1. Thereby answering research question 2: *Which management areas can be identified, in each key factor, affecting the organisational innovation capability?*. The key factors are treated separately and the most important management areas are presented below without indication of importance.

Table 1: *Identified key factors of the Innovation Management System and the management areas related to the factors*

Key factor	Key management areas
Organisational Context Management	1. Acquire customer insight 2. Obtain deeper customer understanding 3. Manage political, technical, economical, and social aspects 4. Adapt to new information
Innovation Strategy	1. Steer towards value focused innovation 2. Create a focus on internal capabilities 3. Link innovation strategy to business strategy
Innovation Culture	1. Create organisation-wide values, norms, and practices that supports innovation 2. Trigger individuals to innovate 3. Create a commitment to innovation from top management 4. Create incentives for employees to innovate
Innovation Performance Measurement and Management	1. Measure innovation 2. Use measurements to increase the organisational innovation capability
Collaboration and Communication	1. Encourage collaboration between individuals 2. Facilitate collaboration through communication 3. Manage costs of collaboration and communication
IP and Knowledge Management	1. Appropriate returns from investments 2. Assure freedom-to-operate 3. Create incentives for knowledge sharing
Resource Management	1. Manage human competences 2. Create time for innovation 3. Manage reallocation of resources between projects
Front-end Innovation Process	1. Create ideas 2. Manage ideas and select projects 3. Create development projects 4. Evaluate innovation development projects
Back-end Innovation Process	1. Capture value through matching innovation to business model 2. Validate business model

3. Method

The following chapter outlines the method used in the empirical phase of the study. To start with, the overall research design and method are described. The method is divided into three phases; screening process, case studies, and data analysis, which are presented in detail separately. Further the two defined sample groups are described, one used for the screening process and the other for the case studies. Finally, the validity and reliability of the research is discussed followed by an overall method discussion.

3.1. Research Design and Method

The empirical part of this thesis will examine good practices within key factors of the Innovation Management System, defined in the theory. Using a deductive approach, the existing literature is compared with the good practices. This in order to establish management areas that give a positive result on organisational innovation capability. Bryman and Bell (2011) defines a deductive approach as testing hypotheses based on existing literature in order to confirm or reject the hypotheses, which is the aim of the focal study.

This thesis consists of two phases of data collection, the screening and the case study process, where the focus is on the cases and their uniqueness. This is according to Bryman and Bell (2011) defined as a multiple case study. The multiple-case study design is used to gather extensive knowledge about practices, within all areas of the Innovation Management System, thereby creating a holistic view of organisational innovation capability. The first phase, the screening process, is made to identify unique cases with good practises to reduce the original sample group. The second phase is a more extensive case study of the selected organisations. A case study is focused on a bounded situation or system and is often connected to qualitative methods in order to generate detailed and intensive examination of the case (Bryman and Bell, 2011).

The techniques used in order to collect the required data are the research method (Bryman and Bell, 2011). In figure 2 the main steps in the study are presented together with the input, contribution and methods connected to each step. Further, the steps are elaborated on separately below.
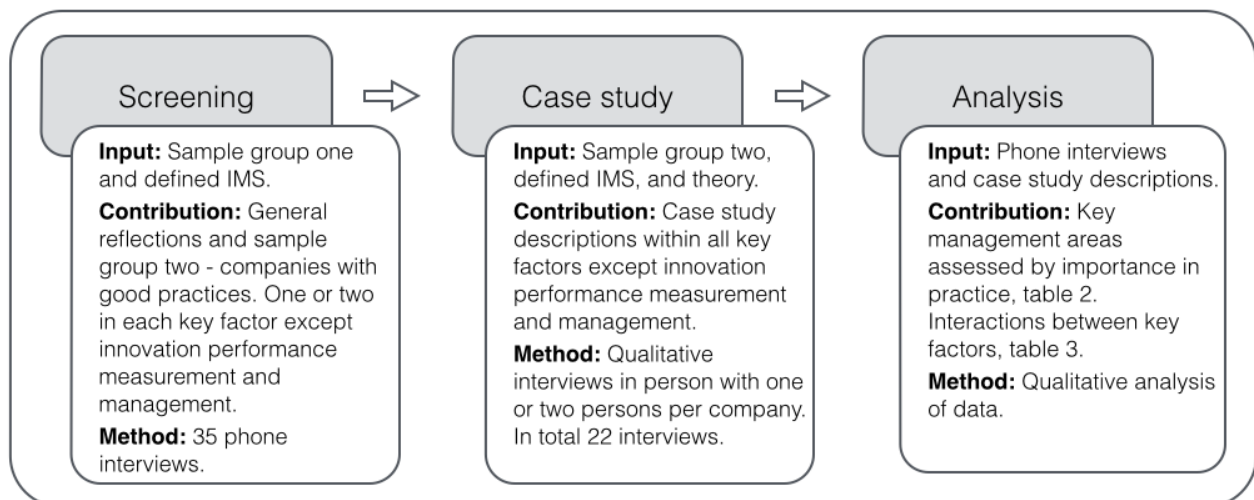
Figure 2: *The three steps in the research method and the input, contributions and method used within each step.*

Screening Process

The screening process was initiated by contacting the original population, defined in 3.2., through email in order to search for interest of participating in the study. The interested participants were contacted by phone for an interview of approximately 30 minutes. In total 35 interviews were conducted. Since travelling around the country would have been time consuming and costly, phone interviews were considered to be appropriate in the screening process. This is further supported by Bryman and Bell (2011), who argue that cutting costs is one of the main advantages with phone interviews. On the other hand, one disadvantage with phone interviews is that body language cannot be observed. However, since the interviews were conducted as a screening process the missed observations from body language were considered negligible.

The interviews were semi-structured, meaning that an interview guide with fairly specific topics was established. However, the questions were not asked in the same sequence and follow-up questions were allowed. The questions were open and thereby allowing the interviewees to answer in their own words, hence not suggesting any certain answers. The interviews were recorded to allow repetition and more thorough examination of the answers. (Bryman and Bell, 2011). As soon as possible, after the interviews were conducted, they were summarized and possible areas of strengths were identified. The short time frame facilitated writing the summaries from memory. In order to avoid misinterpretations both authors participated and discussed the results in between them. Further, the recordings were used as complement and came to use when differences in opinion occurred.

Selection of successful companies

The answers were compared and analysed with the focus of identifying *successful* organisations within all key factors of the Innovation Management System. In order to be considered *successful* the organisations should have a clear focus on the focal key factor. Further, an initiative should exist which, according to the organisation, has improved their innovation capability. Hence, being successful implies, in this context, that the organisation can be considered to be in the forefront within the focal factor. This due to investments made rather than a developed best practice. Therefore the following were taken into consideration when choosing the case organisations; which organisation with the same area of strength seemed to be most *successful* within the area, the level of interest and enthusiasm showed by the interviewee about the area, as well as the organisation's industry. From the analysis twelve interviewees, all at different organisations, were chosen for the case studies. The organisations chosen were considered to be good examples within certain key factors of the Innovation Management System and constituted the second sample group.

Case Study

Twelve case studies, one or two within each key factor of the Innovation Management System, were conducted. All cases were conducted at different organisations and two persons, engaged in the initiatives, were interviewed within all except two cases. In Appendix 1, a list of the interviewees' role at the focal organisation as well as the length of the interviews conducted is presented. This to avoid single respondents representing an entire organisation, and thereby receiving one-sided descriptions of the cases. In line with this, Bryman and Bell (2011) argue that it is unwise to assume that one person has the knowledge of the entire organisation, even though the respondent is high up in the hierarchy of the organisation. However, due to the fact that the interviewees were engaged in the initiatives, it is reasonable to believe that they could communicate a nuanced picture of the initiative.

These interviews were held in person to make body language observable. Further, the interviews were semi-structured, thus flexible. The interview guide varied due to the fact that different factors were

addressed between the case studies. The common feature between the interview guides were that all addressed; the identified key management areas connected to the focal factor, the important aspects to successful implementation of the initiative, and what positive effects the initiative has brought to the innovation work at the organisation. Thus, both the key management areas, summarised in table 1, and interactions with other factors were addressed in order to answer research question 4 and 5.

One of the interviewers asked questions in accordance to the interview guide, while the other had a more passive and observing role. However, both interviewers asked follow-up questions when appropriate. The interviews were, to assure correct interpretation, recorded and thereby repeatable. To simplify the writing of the case descriptions, a basic transcription in bullet points were compiled. Moreover, the emphasis during these interviews was on what the interviewees' found important to explain in order to establish a general understanding of the topic in question. This is how a qualitative interview should be performed (Bryman and Bell, 2011). The interviews aimed for a description of; the background and original problem, the used practice, and the results of the introduced practice. Finally, the case descriptions were sent to the interviewees for validation of the interpretation of the interviews.

Data Analysis

Due to the study design, the data of the case studies were mainly analysed within cases since comparison between the cases were irrelevant. The reason for this being that the key factors were represented only by one case study each. However, three factors included two organisations each, thereby these factors were relevant for comparison between the two organisations.

The results from the case studies aimed for a proper description of; the background to the organisation's choice to develop the initiative, the practises used, and the results from the implemented practice. Since the results were of a descriptive nature, the authors tried to eliminate their own interpretations from the case descriptions. Instead the focus was on telling the focal organisation's story. In order to validate the description it was sent for confirmation to the interviewees.

Further, the completed case description was analysed and the identified management areas, within each key factor, were assessed from an importance to practice perspective. This means that the management areas were assessed by importance to achieve successful implementation of the studied initiatives. The importance index was decided by analysing the focus given to the focal management area during the interview. The scale used was; *not important*, *important*, and *very important* as well as *not addressed*. A management area was considered not important if the interviewees explicitly expressed this, important if the area was addressed briefly, and very important if the interviewees emphasised on the focal area. Further, if not addressed in the interview no conclusion could be drawn about the importance of the management area. Finally, suggestions of interactions between key factors were identified through analysing the interviewees expressed need for supporting functions as well as the initiatives' influence on other factors.

3.2. Data Sample

The original population of this study was mainly the associations *Innovationsledarna* and *IMIG*. The population had the size of 104 individuals, all-working with innovation management at Swedish organisations. These organisations all have invested and focused on becoming more innovative and can in many cases be considered as innovation leaders in their focal industry, implying that other organisations may rather have invested less in increasing their innovation capability.

The original population was reduced to 35 respondents, which constituted sample group one. The sample group consisted of individuals, working with innovation management at different levels within organisations, who reported their interest of participating in the study. Since the respondents were chosen simply because they were available to the authors, the sample can be defined as a convenience sample (Bryman and Bell, 2011). However, the aim of the study is to identify good examples within each key factor of the Innovation Management System and not the best practice. Therefore, it can be argued that a sample consisting of interested respondents who works for organisations that invest in innovation activities is sufficient to find good examples.

From sample group one, twelve organisations were selected to constitute sample group two. The second sample group consisted of the respondent representing the organisations in the first sample but in order to avoid single cases, one additional respondent within all organisations except two was added. The second respondent was chosen by the first respondent as a suitable representative involved in the work of the focal initiative. The second sample group therefore consisted of 12 organisations and 22 respondents.

Sample Group One

Sample group one consisted of 35 respondents employed by 31 different organisations, of which 6 was in the public sector or a non-profit organisation. The 25 others could all be considered as large corporations[3]. These organisations represented many different industries; automotive, hygiene, heat transfer, locks, plumbing, network video, software, steel, heavy tools, telecommunication, trucks and heavy machines, spirits, medical equipment, food, research institutes, security, cosmetics, roads, military equipment, airline, and banking.

Sample Group Two

The second sample group, interviewed in the case studies, consisted of 12 organisations. They will be briefly presented below, in terms of e.g. size, values and innovation focus. The presentations aims to give a short organisational background, used as context to the case studies.

The Absolut Company

The Absolut Company was founded in 1979 and is nowadays a part of The Pernod Ricard Group. As one of the world's leading spirits companies, active in over 150 markets, The Absolut Company is most recognised for Absolut Vodka. Further, The Absolut Company has branded themselves as a way of life with a close connection to art, design, fashion and creativity. The work environment is described as: *"a place where ideas are shared, tested and realized and creativity is a treasured asset."* Finally, The Absolut Company has a clear focus on innovation and is well known for their agile way of working. The head office, consisting of about 200 employees, is located in Stockholm where all strategic brand issues and brand innovation are managed. (www.theabsolutcompany.com, 2015).

Alfa Laval

Starting in 1883, Alfa Laval has become a leading global supplier of products and solutions for heat transfer, separators, and fluid handling. They are active in over 100 countries with more than 17 500 employees worldwide. In order to provide value to their customers, Alfa Laval has summarized their mission: *"To optimize the performance of our customers' processes. Time and time again."*. Further, with the focus on creating better everyday conditions for people, Alfa Laval is committed to the goal

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[3] According to Bolagsverket, link in reference list.

of saving energy and protecting the environment. Alfa Laval is known for focusing on innovation and continually makes investments to build, strengthen and develop the company's global leadership. Currently Alfa Laval holds over 1900 patents and introduces 35-40 new products per year. (www.alfalaval.com, 2015)

Axis Communications

Axis is a provider of network video solutions for professional installations, established in Sweden in 1984. With about 2000 employees, active in more than 40 countries they have established themselves as the global market leader in network- and surveillance cameras. Axis was the first company to launch a network camera and thereby initiated the shift from analogue to digital technology in the 90's. Further, R&D is highly prioritised at Axis and generates a high rate of innovations within different areas; this enables the company to keep their market leading position. With their vision: *"Innovating for a smarter, safer world"* they continue to deliver high value to their customers. (www.axis.com, 2015)

MSF Sweden Innovation Unit

Médecins Sans Frontières (MSF) is an international non-profit organisation consisting of 24 national organisations. Five of them are operational units, located in France, Belgium, Netherlands, Spain and Switzerland. These run projects and determine where and how action is needed. In Sweden, MSF has a national organisation, which mainly recruits volunteers and raises money. However, within the organisation an innovation initiative was established, initially as a project but have now evolved into an innovation unit; MSF Sweden Innovation Unit. This unit aims to facilitate innovations for humanitarian efforts and consists of three employees and volunteering project managers. (www.msf.org, 2015)

NCC Roads

NCC Roads is one of four business areas within NCC Group, offering products and services in and around roads. They cover the entire value chain; from production of stone material and asphalt to paving work and road services. NCC Roads has about 4300 employees and is mainly active in the Nordic countries, where they are the largest actor. Additionally, they export stone material around the Baltic Sea. NCC Roads has a clear focus on sustainability and products and services are developed with the aim of decreasing the environmental impact. In line with this, NCC group's vision is: *"To renew the industry and offer the best sustainable solutions"*. (www.ncc.se, 2015)

Oriflame Cosmetics

Oriflame Cosmetics was founded in 1967 and is a global cosmetics company. They have branches in over 60 countries with about 7500 employees. Oriflame distributes their wide assortment of products through direct sales and targets the low price segment of the market. Further, they market themselves as innovative with a large product portfolio. Oriflame Cosmetics vision: *"to be the best, to be number 1 in the world selling beauty products directly"*. (www.oriflame.se, 2015)

Sandvik Coromant

Sandvik Coromant is a world leading company supplying the metalworking industry with tools, tooling solutions and know-how since 1942. They offer world-class products for turning, milling, drilling and tool handling, together with extensive process and application knowledge within machining. Today Sandvik Coromant consists of about 8000 employees located in 130 countries. As a market leader Sandvik Coromant invest heavily in R&D. Sandvik Coromant still operates according to Sandvik's basic values: *"constant technological development and close contact with the*

customer". Following this line of reasoning Sandvik Coromant aims to, through extensive investments in R&D, create unique innovations and set new productivity standards together with their customers. (www.sandvik.coromant.com, 2015)

SCA Hygiene Products

SCA is a global leading hygiene and forest products company, founded in 1929. Today SCA consists of about 44 000 employees and sell their products in about 100 countries. With the vision: *"We will make a difference by providing essentials for everyday life"* SCA aims to grow and strengthen its position in both mature and emerging markets. SCA identify innovation as a driver of growth and profitability and has therefore made innovation one of their three strategic priorities. SCA further believes in increasing their innovation capability through both facilitating for internal collaboration and open innovation. Last year SCA launched 30 new innovations and applied for 48 patents. (www.sca.com, 2015)

Scania

Scania was founded in 1891 and is today one of the world's leading manufacturers of heavy trucks and busses. Scania consists of about 42 000 employees and has their head quarter located in Södertälje, Sweden, where the R&D operations take place. Further, Scania has a sales and service organisation in over 100 countries. Scania aims to continue being a market leader and gain: *"profitable growth through optimal transport solutions over time"*. The core values of Scania are; to put the customer first as well as to respect individuals and quality. These are closely linked and therefore applied as a unified concept. In order to maintain a strong position on the market Scania focuses on continuous improvements. (www.scania.com, 2015)

Uponor

Uponor was founded in 1918 and is today a leading global company providing plumbing and indoor climate solutions for residential and commercial building markets across Europe and North America. The company has about 3800 employees in 30 countries. Uponor's vision is: *"Throughout the world, our solutions enrich people's way of life"*. By offering innovative solutions for residential and commercial building projects, Uponor aims to sustain their leading position in the market. Further, Uponor highlights their long experience and knowhow in the area as well as their understanding of customer needs as a solid platform to develop new innovations. (www.uponor.com, 2015)

Volvo Cars

The first Volvo was produced in Gothenburg 1927; today Volvo Cars produces cars in the premium segment on a global market. With about 22 300 employees Volvo Cars has sales in about 100 countries. With the vision: *"To be the world's most progressive and desired premium car brand"* Volvo Cars wants to make life less complicated for people and therefore continuously focuses on safety, quality and the environment. Further, Volvo wants to attract employees with new and innovative ways of solving the upcoming challenges in the car industry. (www.volvocars.se, 2015)

Volvo Group

Volvo Group, founded in 1927, is one of the world's leading manufacturers of trucks, busses, construction equipment, and marine and industrial engines. Volvo Group's headquarter is located in Gothenburg, Sweden and with around 100 000 employees all over the world they sell products in more than 190 markets. Volvo Group's vision is: *"To become the world leader in sustainable transport solutions"* and have the core values of safety, quality and the environment. (www.volvogroup.com, 2015)

3.3. Reliability and Validity

In order to address the internal reliability and validity three actions has been taken. First and foremost, to be able to confirm the case studies, more than one interviewee at each organisation were needed and therefore single cases were avoided. Due to different circumstances this was not possible in two of the cases. However, in all cases the initiator or the responsible manager described the initiative. This implies that the practises were well described by these persons due to their expert knowledge about the initiative. Nevertheless, it is valuable to interview a second person in order to gain a different perspective of the initiative and thereby confirm or add information to the story.

The two authors were both attendant at the interviews. Further, the interviews were transcribed by one author, who also wrote the first draft of the case. However, in order to assure a common view of the case the authors worked together with reviewing the draft. If differences of opinion were raised, this was resolved by listening to the interview again. Since the two authors agreed over the case study the internal reliability increased, as expressed by Bryman and Bell (2011). Further, respondent validation, which is a means of confirming validity, was used (Bryman and Bell, 2011). This was accomplished by sending the finalised case study to the focal organisation. The organisation hence had the possibility to approve or comment on the report, however, no organisation suggested any major changes. This implies that the cases where correctly interpreted by the authors and that the, by Bryman and Bell (2011) mentioned, difficulties with censorship were not a problem. Further, the organisations had no involvement in the discussion part of the report.

Regarding the external reliability and validity, the first one is difficult in a qualitative study (Bryman and Bell, 2011). However, if the same persons were to be interviewed, the same stories should be the result. Further, to get external validity there is a need for a larger sample within all factors to be able to generalize the findings. This implies that further research is needed to draw any generalizable conclusions. However, the objective of examining good practices within each key factor can be considered to be fulfilled. This due to the fact that all organisations have invested and focused on becoming more innovative and can in many cases be considered as innovation leaders in their focal industry. Implying that other organisations may rather be less experienced with innovation activities. Hence, the results can be used as an indication of how to address the key factors.

3.4. Method Discussion

Through the chosen method a large amount of data has been collected. In particular, the screening process consisted of about 17 hours of recorded interviews and the case studies of about 25 hours of recorded material. Due to lack of consistent questions in the screening process, only few general conclusions can be drawn from this material. Hence, the 17 hours of interviews were mainly used as a screening process in order to identify good practices. If more consistent questions would have been asked, more interpretable knowledge from the first 34 interviews would have been gained which would have further improved the generalizability of the study.

Following the analysis of the results from the screening process, successful organisations were chosen. Successful was defined by the degree of focus on the focal factor and if initiatives existed in order to increase the innovation capability, defined in 3.1. However, successful organisations might have been missed since the screening interviews briefly touched the different key factors. Hence, a good practice from a successful organisation could have been lost if the interviewee did not have interest in elaborating on a specific area or did not believe that their organisation was particularly good in this area.

The case interviewees were all involved in the initiatives implying that they had the knowledge required to communicate the initiative in the best way. However, due to the fact that many of the interviewees were responsible for the initiatives, there is a risk of a glorified description of the results.

4. Research Findings and Analysis

In this chapter the results from the in-depth interviews are presented following the disposition previously used, with the factors arranged by the four categories of the Innovation Management System. The results will be presented with the key factor as a headline together with the name of the focal organisation. In four factors two organisations have been interviewed hence two cases are presented. The cases are structured in a similar manner with a background and problem description, description of the used practice, and the results from the implemented practice. In some of the cases quotes from the interviewees are presented, it should be noted that these quotes are translated and hence not the exact words of the interviewee. The identified management areas in chapter 2 are highlighted if detected in the case studies. Hence, this chapter answers research question 3: How are the key factors managed in practice?.

4.1. General findings

The general findings consist of the reflections from the 35 phone interviews conducted in the screening process as well as from the 22 in-depth interviews in the case studies. Below, these reflections will be presented briefly.

The first reflection from the interviews was that most of the initiatives were relatively recently developed. During the last years, many organisations had started initiatives addressing the organisational innovation capability. However, which key factor the initiative had addressed varied in accordance to personal beliefs of the initiators as well as the internal capabilities and limitations within the organisation. Most interviewees emphasised the importance of an innovation process and had thus started to address the factors; Front-end and Back-end Innovation Process. Mainly, focusing on the ideation phase of the Front-end Innovation Process. The second most common factor was the Innovation Culture, which many of the respondents emphasised as important. However, most of the key factors were addressed by at least a few respondents, which further underlines the influence of personal beliefs of innovation enthusiasts. Not to forget, many of the recently started innovation initiatives did not start from scratch when trying to increase the innovativeness of the organisation. Organisations have worked with innovation for many years, however it might not have been as focused as today.

A second reflection was that during the interviews, many of the respondents touched upon other factors when addressing a specific key factor. Therefore it is reasonable to believe that interactions between the key factors have been detected in practice. In line with this, many of the respondents expressed a need for addressing other factors than the ones currently in their focus. This can be explained by the fact that the initiatives are relatively new and therefore the respondents have not had the time to address all important aspects. However, few have a systematic view and include all factors in their innovation work and hence miss out on possible synergy effects between the key factors.

4.2. External Factors

Below the results from the interviews addressing the factor Organisational Context Management will be presented. In this factor two case studies have been conducted, Scania and Oriflame Cosmetics.

Organisational Context Management - Scania

At Scania, the marketing division acts as the main generator of customer insight. However, working in a highly complex technological industry, Scania has for many years experienced that customers do not have the ability to express their needs. As a result, the generated customer insight rarely leads to innovations of a more radical nature. This due to the, by Scania expressed, big difference between customer insight and customer understanding, the latter implying a deeper knowledge about the customers' expressed and unexpressed needs. In order to gain customer understanding, the employees at Scania need to understand the customer better and observe the customers when using the product. Nevertheless, Scania has experienced that most new employees have little or no understanding of how trucks and busses are used in practice and, as a consequence, low customer understanding. The low customer understanding affects the innovation capability and how innovations are implemented in the products negatively. In turn the risk of addressing the wrong customer needs, and hence not propose higher value to the customers, increases. Further, Scania expresses that high customer value does not come from exceptional components but rather from how components are integrated in the product.

Practice

In order to address the above-mentioned problem of low customer understanding, particularly among employees working in the R&D department, Scania has implemented a series of initiatives. The two main initiatives aim to increase the customer understanding by; develop a basic understanding among employees of how the product is used and by meeting with customers that are experiencing problems with their products.

In order to increase the **basic understanding of how Scania's products are used in practice**, Scania decided to give every engineer working in the R&D department a driver's license for heavy trucks. The engineers get the opportunity to learn how to drive within the first couple of years of employment. To some engineers this is a necessity to perform their job. However, in many cases the initiative strictly aims to increase the knowledge base about the products. Further, Scania provides trucks and encourage the employees to use them in order to systematically learn about the product. According to Scania, this basic product understanding is the foundation when accumulating a deeper customer understanding. However, understanding the product does not imply understanding how the product is used per see and this needs to be addressed further.

The second main initiative, called the Early Warning System, aims to conduct customer insight and **deepen the customer understanding** by letting engineers work for an affiliate service station for 6-12 months. While working at the service station, the engineers are at a daily basis exposed to customers experiencing problems with their Scania products. In the attempts to solve these problems, the engineers have the opportunity to gain a greater understanding to how the customer actually uses the product and hence a greater knowledge of how the product should be developed in order to satisfy the customers' needs. During the assignment the engineer writes weekly mails regarding their experiences and new insight in order to **share their knowledge** with their colleagues. Further, if the Early Warning System engineer has faced a larger problem with a truck, this should be reported back to the office instantly. This gives the engineers at the office the opportunity to gain customer insight about problem areas in an early stage. Finally, when the assignment is finished, the engineer can

relate to the market needs. Thereby, this initiative affects the involved engineers' line of reasoning, leading to deeper customer understanding spreading throughout the company.

However, to be able to address the problems expressed by customers, the engineers have to possess a holistic view of the product. Hence the two initiatives are closely related, with synergies between them, and enable both increased customer and product understanding. In addition, Scania expresses a need for identifying **megatrends** and thinking in scenarios in order to not miss out on new opportunities or fail to address threats to the current business. Finally, it is of importance to systematically evaluate the customer value and what price the customer is willing to pay for new innovations.

Results

As expressed by Scania, a deeper customer understanding is a necessity when working with innovation. Due to the high technological complexity of the products offered by Scania, the employees cannot adequately gain a deeper

"If you have more employees that actually understands the product, maybe that is what makes you better [more innovative] than your competitors"

customer understanding without having basic knowledge of how to use the product. By encouraging all engineers working at the R&D department to get a driver's license for heavy trucks, Scania has managed to ensure that all employees possess the basic knowledge needed to develop new products. However, as noted by Scania, product understanding should not be mistaken for customer understanding.

The Early Warning System initiative, on the other hand, leads to a deeper product understanding but also increased customer understanding due to the opportunities to observe customers using the products in a real setting. Hence, the Early Warning System initiative is one step closer to gaining deeper customer understanding. However, since only a few engineers get this opportunity the weakly mails and problem reports is crucial to transfer the new knowledge gained.

The main result gained from the above-described initiatives is first and foremost a greater knowledge base among the employees. This knowledge is the foundation for Scania's innovation capability and increases the number of radical innovations. As expressed by Scania, the increased knowledge about the offered products not only gives a deeper customer understanding but also a better insight to the challenges that colleagues are facing. This leads to increased mutual respect between employees and positively affects the working climate. Further, these initiatives contribute to an open climate where the employees can present ideas to their managers. As an effect of the more holistic view of the product and customers' needs, these initiatives have increased the innovation capability at Scania. Finally, the above-mentioned results all contribute to Scania's innovation culture, which is built on customer understanding and respect for colleagues both within departments and between cross-functional departments.

Organisational Context Management - Oriflame Cosmetics

The cosmetics industry is a fast moving consumer goods industry dependent on high newness, implying that the customers require a continuous large selection of new products. Hence, to address this customer requirement, the product development within the cosmetics industry is rapid. In line with this, actors in this industry are dependent on addressing customer behaviours and market trends in the early phases of the innovation process in order to increase the chances of delivering products with a high level of newness to customers.

Considering limited resources in relation to beauty industry leaders, Oriflame's innovation activities have been very product-oriented, de-prioritizing new opportunities of e.g. business model innovation. Oriflame expressed that previously there was no clear scope of the innovation activities. As a result of this, Oriflame experienced that many new innovations were lacking in inventiveness and commercial success wished for. Hence, there was a need to target innovation activities towards strategically important business areas to increase the chances of gaining commercial success of new inventions.

Oriflame experienced that the employees showed little enthusiasm for innovation activities due to unclear expectations about deliveries. Another reason to the low enthusiasm was that many new ideas were generated, however, few were further developed and commercialised due to the lack of connection to the overall business strategy. This underscores the need for a clear focus of innovation activities based on; internal targets, deeper customer understanding, and mega, macro and micro trends.

Practice

An important first step in Oriflame's strive to gain greater commercial success from innovations was to define the ambition level of the innovation activities. Due to their current market position and target group, emerging markets, Oriflame decided to act as fast adopters. This implies that Oriflame does not aim for radically new innovations but rather to scan the market for new products and early **customer insight** to direct their innovation activities towards proven business areas. The main reason to not target radical innovations was the high risks and development costs such work implies and the low possibilities of appropriating the returns from radical innovations given their current target group.

Guided by the newly defined ambition level of innovation activities, Oriflame could address the issue of how to optimally use business intelligence to increase the possibility of innovations becoming commercially successful. From the goal of acting as fast adopters, Oriflame identified the most strategically important markets in order to narrow down the scope of where to collect customer insight and assess **market trends**. Further, by doing trend analysis on a mega, macro, and micro level Oriflame could pinpoint exceptionally attractive business areas in order to direct their search for customer insight and **understanding of customer behaviours**.

Moreover, to address the problem of innovation activities being disconnected from the organisation as well as to define a clear focus of these, Oriflame decided that all innovation activities should target a defined business opportunity. Therefore Oriflame set up a high-level cross department innovation council to review the corporate innovation strategy and to decide on which projects/business cases to take forward. This implies a need for **close collaboration** between the R&D department and the business intelligence unit since all new product development projects should be guided from customer insight and major trends in customer behaviour.

Results

Oriflame has lowered the uncertainties of what to address when innovating through defining; a clear ambition level, distinct requirements that all innovation activities should target a defined business opportunity, as well as overseeing these goals in an innovation council. As an effect of this,

"We have to create and use deeper customer understanding [as guidance], earlier in the innovation process"

Oriflame has experienced that selected innovative ideas are formalised in proposals and if interesting the ideas are being prioritized and granted resources to be produced. Further, the employees' enthusiasm regarding innovation activities has increased and many of them have expressed that the

collaboration between the R&D department and business intelligence unit have clarified and simplified the innovation work.

By increasing the dynamics between the R&D department and the business intelligence unit, implying that trends and customer understanding is used to guide the innovation activities through the whole process, Oriflame expressed that collected data is used more efficiently. This in contrast, to earlier practice, when customer research was collected only to either confirm or reject new concepts at a later stage of the innovation process. By integrating this research in the early phases of the innovation process Oriflame expressed that fewer projects are being cancelled in the later stages, hence the organisation has been able to cut the financial losses following upon such late rejections. Further, customer research and trend analysis are cost and resource intensive activities and hence needs to be used in a smart and effective way. Oriflame solved this problem by defining a clear level of ambition and by identifying the most strategically important markets. By only performing research on the strategically important markets, guided by the ambition level, Oriflame has managed to reduce the scope of research without decreasing the quality of collected data. This, in combination with the integration of collected data in the early phases of the innovation process, implies that Oriflame has been able to increase the returns from innovation due to the investments made into customer research and trend analysis.

4.3. Organisational Factors

Below the results from the interviews addressing the organisational factors are presented. These are Innovation Strategy and Innovation Culture, in which Uponor and Volvo Cars has been interviewed.

Innovation Strategy - Uponor

Over recent years, although implemented cost reduction programs, Uponor Group has not experienced the expected growth. The default growth can to some extent be attributed to the fact that the distributors' selling Uponor's products have themselves entered the plumbing manufacturing industry. Hence, Uponor's distributors have turned into competitors. Another contributing factor to the default growth was the financial crisis, which impacted the entire construction sector negatively. However, to address the issue of default growth and distinguish their offerings from their competitors', Uponor decided to put greater efforts into becoming more systematically innovative. The company experienced that almost nine out of ten innovations were incremental product innovations and consequently saw the need to address innovations of more radical nature targeting process and business model innovations as well as product innovations. However, the company had for a long time neglected non-incremental innovation activities and hence experienced difficulties with addressing the new goal in a systematic manner.

Practice

The changing competitive environment, due to distributors becoming competitors, has contributed to Uponor's emphasis on increasing the value provided to the customers through innovation. Therefore, in order to address the new goal of becoming more innovative, Uponor had to **map the present state** to enlighten the organisation about the current situation regarding innovation activities. To gain legitimacy in the organisation Uponor collaborated with an external research group who could contribute with their expertise and shed new light on the issue at hand. When mapping the innovation capability at the company, one important area to address was formulating a clear and explicit innovation strategy.

When beginning to formulate the innovation strategy two main questions were asked; "What are we trying to achieve?" and "How are we going to reach our goals?". By addressing the first question, Uponor clarified the goals of the investments made into becoming more innovative. Further, what key performance indexes, KPIs, that should be used to measure the performance

were defined. To further gain legitimacy in the organisation for the innovation investments, the top executives from all departments in the company were invited to participate in interviews, surveys and workshops addressing the focal question - **What are we trying to achieve?** The reason of having a cross-functional team of executives addressing this question was to make them all dedicated to and part of the new innovation strategy, in order to increase the chances of successful implementation. By having a cross-functional team with representatives from all departments, Uponor made sure to address the question from a business model, process, and product perspective.

When addressing the question of "How are we going to act to reach our goals", Uponor made a gap analysis of the present state to identify the main areas to address in order to increase the company's innovation capability. To further dedicate the rest of the organisation to the new innovation investments, workshops were held and surveys used to gain insight to what the lion's share of the organisation perceived as needed activities to reach the goal of becoming more innovative. By using the input gained from the gap analysis as well as the workshops and surveys, Uponor could start to formulate an action plan. The identified actions needed to achieve increased innovativeness were further rated from an importance and urgency perspective to assure that the actions were carried out in a rational and systematic manner.

Results

By formulating an innovation strategy Uponor has managed to achieve congruence among the executives of the organisation about what the company is trying to achieve with the new innovation investment. However, as expressed by Uponor, the investment in becoming more innovative is new to the company. This implies that most actions planned have not currently been implemented; hence the effect from the innovation strategy cannot adequately be determined yet.

By performing a gap analysis of the present state in an early stage of the project, Uponor has experienced that the project got legitimacy in the organisation. Further, collaborating with the external research group, being experts in the field of innovation management, was important to increase the legitimacy of the initiative. As a result from this, the project has gained acceptance from the top executives and hence eased the allocation of resources to the project. As expressed by Uponor, the project would have been doomed to failure without this support and resources. Further, by mapping the present state in an early phase of the project, Uponor has enabled for future performance measurements to be compared to the original state and hence assess the development of the organisation's innovation capability.

Moreover, Uponor expressed that the new investments made into becoming more innovative has rendered in a growing engagement towards innovation activities. Further the systematic approach based on the innovation strategy, which all executives been part of formulating, acts like guidance to all managers in their innovation work. This ensures less uncertainty when performing innovation activities and aims to lower the managers' barriers to undertake such work.

Innovation Culture - Volvo Cars

Volvo Cars' Body and Trim unit within the R&D department has during the last couple of years supported initiatives aiming to increase the innovation culture. This further accelerated when Volvo Cars, through an internal investigation, found out that the employees did not consider themselves innovative. One reason might have been the former difficulties with getting the innovation into production. In order to boost the confidence and increase the employees' innovative capability, Volvo Cars let their employees be involved in different creative activities. This due to believing, that ideas will be created if the employee wants to and gets the possibility to be innovative.

Moreover, Volvo Cars wanted to speed up the regular innovation process. To achieve this, they wanted to increase the chance that an idea would get produced by increasing the number of ideas. Further, they wanted to create an open and transparent process focused on creativity. The aim was to involve more employees in the innovation activities and not only the ones usually active in these kinds of events. Further, the aim was to reach other employees than design engineers in order to spread a positive innovation culture. Finally, Volvo Cars wanted to increase the employees' awareness of innovation activities as well as inform the employees of where to turn with new ideas.

Practice

In order to boost creativity throughout the company the SPARK, Science Park, initiative was created. The initiative has been up and running for two years and in order to further accelerate the process it has been modified. Both versions will be presented since a change in culture takes time, and needs continuous effort to gain acceptance. It is about a change in people's mind-set and to help them become more confident when trying new things, this implies a need for a long-term commitment to establish a creative culture.

The first version of SPARK was a circular process with the time period of one year. The starting point was to choose an appropriate project; it should be a new car project close to but not yet in production. The initiative was mainly focused on the product development division and began with customer interviews and a study of the market. Thereafter, the first **creative events** were arranged, aiming to generate radical innovations and make people see what is possible. These were mostly workshops with participants from cross-functional departments. In the end of this stage another event was organised, a pull event, to which top management was invited. The event was a way of getting reactions to the generated ideas and concepts. Further, the development of the ideas continued until the final exhibition, which lasted for three days. During this event all employees in the entire organisation had the opportunity to be inspired by the new ideas.

The second version, the on-going version, is an accelerated version of the first initiative. Instead of single workshops, the management of Body & Trim agreed to give **all 700 employees** the opportunity to participate in a 45 minutes long SPARK event. The objective of the event was to show the employees that they are innovative and moreover to spread commitment to innovation throughout the division. The employees divided themselves into groups, consisting of preferably 8-10 persons, mainly following the organisational structure. The ideal number of participants is about 10, fewer decreases the quality of the discussion of the ideas and more numerous groups gets too anonymous. When the group is formed they choose a time slot for the SPARK event at Volvo Cars intranet. Three weeks before the event the two employees leading the initiative, hereby called the innovation-drivers, visit the group in order to discuss the innovation topic. It can be the group's area of specialty, an unknown area, a special car model, a part, or process etc.

At the event day, the innovation-drivers, prepare the especially dedicated room located in the engineering workshops. The preparations can be in form of a special car model, a competitor's car and other inspirational material. Besides inspiration materials the walls are filled with a few of the previous groups' ideas and some keywords within the chosen innovation area. Additionally, to make the participants feel welcome, the room has a red carpet and the participants are served coffee and cookies. For the participants this is a new experience and the preparations shall trigger the feeling that this is a special event, but also get them out of their comfort zone. The event starts with watching inspirational film clips and after that the participators receive papers and should start writing down ideas, one idea per paper, signed with their name. During the idea generation the innovation-drivers work as facilitators and try to push the participators to come up with ideas in order to get all of them to contribute. However, they are allowed to get inspiration from the old ideas posted on the wall or even borrow them. Some people are hesitant and do not like the event in the beginning, however, after about 20 minutes this often changes and they become more positive and engaged.

"I know what happens when you give people time and the opportunity to be creative. They love it!"

In the end of the event one of the innovation-drivers reads the ideas out loud. This is when the energy increases the most, the participators often want to stand up and show their ideas and discussions occur. The ideas are simultaneously divided into categories depending on how well developed the idea is. Thereafter, three or four ideas are chosen for further development. The group gets one idea to continue working on during e.g. the coffee breaks and the innovation-drivers take two ideas. During this period it is also possible to have a prototype made by the workshop personnel. Four weeks after the event there is a voluntary follow-up meeting where the development of the chosen ideas is discussed. Thereafter, the ideas are sent to the Innovation Hub, which is a forum for innovation where Body and Trim's management discuss which ideas to develop. They do an investigation of the ideas including cost calculations etc. and pass the ideas, with potential, on to the production team. Finally, in line with the first version of SPARK it is important to share the results and the ideas with others. This is done by posting the ideas on the intranet but it will also most likely be an exhibition event, "best of SPARK", in order to spread the generated ideas throughout the company.

Results

SPARK was initiated with the purpose of making an impact. Of the around 500 ideas generated so far, around 100 has been chosen and pushed into the system. This is a large number and has made it clear that there is no point in trying to stop this innovation initiative. Since all employees at Body and Trim shall participate, it takes more energy from the employees. However, this has been a successful way to increase the commitment to innovation activities and those not usually engaged in these activities have been able to try their ability to be creative. Further, the initiative has contributed to increased transparency since all ideas are connected to the inventor.

The SPARK initiative has also contributed to an increasing awareness of innovation. Before the initiative, few recognised the Innovation Hub and many wondered what happened to new ideas. Today, the employees know where to turn with an idea and what happens to it in the Innovation Hub. Since all ideas are signed with the inventor's name they know they will get **credit for the idea** if it becomes successful. Moreover, the **top management group** on Body and Trim is supportive of the initiative, essential for the innovation culture, and the pull event and exhibitions have further contributed to this support. If you have top management support, an idea is more likely to get produced or resources are more likely allocated to innovation activities. However, these initiatives

would clearly not have happened without innovation enthusiasts and these employees are essential when trying to increase the engagement throughout the company.

Finally, SPARK has contributed to discussions about innovation and made innovation a topic at e.g. coffee breaks. However, it is difficult to extend the innovation initiative outside the SPARK events, but Volvo Cars argues that every innovation event contributes to improve the innovation culture. This due to that innovation activities further trigger the employees to innovate. The employees participating in the SPARK event also learn how to innovate and they might feel less insecure about generating ideas in the future, meaning that Volvo Cars fulfilled their goal of boosting the innovation capability of their employees and also the innovation culture at Body and Trim.

4.4. Enabling Factors

The enabling factors are; Innovation Performance and Measurement, Collaboration and Communication, IP and Knowledge Management, and Resource Management. In the screening process no appropriate case could be detected in the first factor. Collaboration and Communication is divided into two parts, internal and external. SCA Hygiene Products has been interviewed in both parts resulting in two cases. Additionally, MSF Sweden Innovation Unit was interviewed for a case in the external part. In the two remaining factors NCC Roads respectively Sandvik Coromant and Axis Communication were interviewed.

Innovation Performance and Measurement

No appropriate case.

Internal Collaboration and Communication - SCA Hygiene Products

Below the two cases conducted at SCA Hygiene Products are presented. The first case addresses internal collaboration and the second external collaboration.

Internal Collaboration

SCA is a large global company located in more than 50 countries. Many countries have sales and production while R&D mainly is centralised to Sweden and 5 other locations. Having a highly centralised research and development implies that SCA has a natural base for collaboration within R&D. To further increase the innovation capability within R&D, SCA decided to facilitate cross-functional idea generation through collaboration between departments and sites and launched one common, global and collaborative idea management tool.

The fundament is that the many is smarter than the few as different areas of expertise are brought together when collaborating. By reaching out to more people with an issue, a larger knowledge base is accessed. Applying such a collective approach naturally has its challenges, such as how to make employees motivated to participate.

Practice

As mentioned above, SCA believes that collaboration in the innovation process is beneficial to achieve better and more matured innovations faster. However, the collective ideation is mainly focused on the early phases of the innovation process. In order to **facilitate collaboration** SCA created an idea collaboration platform supporting internal crowdsourcing. The

"If you have a complicated issue it is beneficial to collaborate with others to solve it. This due to that all individuals possess different knowledge and if we help each other solving the puzzle, we end up with a lager map with more details."

platform is a channel to reach and connect the employees throughout the company. When an idea is posted on the platform all employees have the possibility to comment and elaborate on the idea. The platform is transparent, meaning that all posted ideas and comments are signed by the inventor/inventors. The platform is open to all employees at SCA, however, not all employees are active users of the site.

At the idea collaboration platform employees have the opportunity to ask for ideas solving a specific and defined problem. These calls for ideas are named challenges and are open for all employees to submit ideas to. To support the use of challenges as an idea generation tool, SCA is using the work-method of challenges in connection to the innovation process. This way of working implies that the idea generation is demand-driven as all ideas are connected to an existing demand (challenges). This way of working is more efficient compared to spending time on ideas without knowing where and if the idea would be developed. In order to initiate a challenge the questioner has to fulfil some basic demands; they need to have mandate for decision-making, a plan for what to do with the results and a budget for it, and the issue needs to be connected to the innovation strategy in the focal area.

SCA has experienced that a good challenge formulation is critical to assure that high quality ideas are generated and that the selected description of the challenge, the formulation, affects what types of ideas that are finally submitted. After closing the challenge, the questioner is responsible of evaluating the submitted ideas. It is also the questioner who decides how to proceed with an idea and to what extent the idea submitter will be involved in the development process. The range of involvement goes from very moderate to ask the idea submitter to form and manage a development group.

SCA uses several **communication** channels in order to raise awareness when a new challenge is posted. Information is published on the intranet and on the information screens located in the offices globally. Most effective is to complement the above communication channels with direct emails. The targeted group for communication is the employees selected to have a large knowledge base in the focal area of the challenge as well as all the people that previously have been active on the platform, the so called early adopters. By addressing these early adopters, SCA is spreading the enthusiasm throughout the company.

To increase the activity on the platform communication is found key. The activity level is seen to be affected by the tone of voice, content, timing, and channels. SCA has built a process for communicating information about the idea challenge. The first part is creating a tickling interest, meaning; how do the mail about a new challenge stand out among all other mails. One way is to make the employee feel special and chosen and to link to more inspirational material for those interested. By experience, SCA know that those visiting the inspiration page also, to a higher degree, participate in the challenge later on.

Today, SCA has come a long way with increasing the number of users posting ideas on the platform. Therefore, the current focus is on increasing the number of comments and elaboration on other ideas. The comment function is meant to be a way of discussing and refining existing ideas and should be one of the cornerstones of the platform as a tool to improve the quality of the ideas. In order to increase the number of comments SCA started an initiative using moderators with the task of starting dialogues, hence, eliminating the obstacle of writing the first comment. The strategy has from the beginning been to create a fun and inspiring idea collaboration platform as to make it to spread virally throughout the organisation.

The final part of communication is feedback on the posted ideas. Individual feedback is given to the best ideas and the aim for the future is that the other users' and moderators' comments shall work as feedback, this would be the most time efficient and constructive way of giving feedback and maintain engagement among the users.

Results

The idea collaboration platform has increased the internal collaboration in the early phases of the innovation process. First, the platform has solved practical problems such as the concern about inventor names and origins of ideas. Since it is possible to co-write ideas it also facilitates sharing jointly generated ideas with others. Further, by being transparent, the idea collaboration platform contributes to a more open climate and has proven to connect employees from cross-functional departments. In turn, the more open climate positively affects the personal motivation among the employees to participate in idea generation activities.

SCA has received positive response from the employees using the idea collaboration platform. Currently there are around 1200 users and the number is increasing in a steady state. The next focus is therefore on idea quality instead of quantity. This due to the fact that the challenges attract a lot of ideas and that the costly task is to evaluate them. Finally, the idea collaboration platform has opened up the possibility to generate ideas within non-technical issues, such as human resources.

Summing up, SCA is facilitating collaboration through being consistent about the intentions within the company. Collaboration can be facilitated e.g. through assigning people to facilitate workshops or by employees with exceptional networking skills connecting people. SCA has increased their innovation capability by using collaboration as a tool for generating ideas. It is seen that the right amount of collaboration leads to faster results and higher quality than trying to solve the problem single-handed. When formulating a challenge in a clear and defined manner you enable demand-driven idea generation at its best by tapping into the employees' different perspectives and knowledge bases.

External Collaboration

SCA has been using external collaboration for many years, long before the concept open innovation was established. This was mainly with traditional external collaboration partners such as suppliers or universities. However, when open innovation became increasingly popular new opportunities arose and SCA allured. Two new initiatives took form, one was using intermediaries and the other was a platform for external collaboration.

SCA stresses the importance of using open innovation in line with the overall strategy and as a complement to internal innovation. There is no general model that fits all companies, instead there is a need to find the best way to use open innovation in order to fulfil your focal needs. Further, there is a need to identify the reasons

"We need open innovation to gain new influences, ideas, competences, and resources."

why you want to use open innovation and what you want to achieve. SCA wanted to increase their innovation capability with open innovation and boost innovation as a complement to the internal activities.

Practice

SCA uses open innovation in two ways, **passive or active search for collaborations**. The first approach is appropriate since SCA is producing consumer goods, which are everyday items. Therefore there are lots of

"If we have an on-going project and launches two months later, they [external sources] might think SCA has launched their idea. If you have IPR it is clear what is protected."

suggestions, ideas and thoughts outside the company of how their products can be improved. The external source, wanting to initiate collaboration with SCA, can be everything between individual inventors and other companies.

When evaluating a potential collaboration, the first important task is to define the ownership of the idea. SCA has chosen not to accept unprotected ideas, due to the risk of conflicts further down the process. Further, SCA does not want to expose their pipeline and if the external idea is protected, IPR can solve the discussion of who came up with the invention. Moreover, if you enter collaboration it is important to clarify the ownership since it facilitates the development of the product and protects both SCA and the inventor. The second task when being contacted by an external source is to examine the idea and find a suitable internal receiver. Finally, when initiating collaboration it is important to identify the focal needs, what the expectations are from both sides, time horizon etc. An external collaboration should be in terms of win-win agreements, therefore it is important to be **open with your intentions**.

The passive search has lately been supported by the open innovation portal on SCA's main web page. Through this portal SCA invites external sources to collaborate within specific problem areas. These areas are connected to long-term goals and the need for external competences, implying demand-driven innovation. The portal is a passive initiative which makes it an unpredictable process, regarding when to expect a solution, and not suitable for problems with a short time frame. Therefore, the areas chosen are entirely new ones or areas under constant development. The problem area is formulated in general terms, describing the need and the circumstances. From the ideas received through the portal, few are of use to SCA but some exceptional ideas have been found. The initiative therefore builds on the expression; *in order to get one good idea you need to start with many ideas*. Finally, independent of the quality of the idea, feedback is of great importance and all ideas posted on the portal gets response. Even if the idea is rejected, the answer should be delivered in a good way and within reasonable time.

The active search is based on identified problem areas and needs, these are mainly where the internal competences are lacking, i.e. often within new areas of expertise. The next step is to identify possible partners who can provide the competences and resources needed. SCA has a large existing network of possible partners such as different companies or universities. Using this network has been the traditional way of solving the problem. However, sometimes the existing network is not enough and there is a need to expand outside of these boundaries. This can be done by for example using innovation intermediaries who provides a network of experts within different knowledge areas. This is suitable when actively searching for a solution in a problem area with a short time frame. The intermediaries help promoting the issue and distributing it in their network, often targeted to certain groups within the network. The question is posted anonymously which helps with keeping an open mind to possible solutions, and all answers SCA receives are also anonymous. Further, more confidential information is possible to post because of the agreements, between the intermediaries and their users, and IPR can be incorporated in the agreement when needed.

When posting an issue through an intermediary there is a need for a graspable question. It can be suitable to ask for more general input in the beginning of a project but it still needs to be graspable. However, depending on how the question is formulated a different outcome can be expected, both in the number of ideas generated as well as in the quality of the ideas. A general question receives many ideas of various quality. On the other hand, a narrow and deeper question receives fewer ideas but this does not automatically implies poorer quality since the limited scope often addresses experts within the field. Further, it is important to pay attention to the vocabulary in order to make sure that the targeted group understands the problem. However, independent of the sort of question, clear criteria needs to be assigned since these are the terms for evaluating the ideas. Feedback is given to the idea owners in terms of whether or not they fulfil the criteria, the intermediary has clear guidelines for this. If an idea fulfils the criteria a reward is paid. When the reward is paid, contact information is exchanged and it is possible to contact the individual in order to start collaboration.

Results

SCA has always valued collaboration between employees or with external sources, and used collaboration as means to improve their innovation capability. SCA started new initiatives to improve collaboration due to the will to continuously improve their innovation activities. These initiatives of the open innovation portal and the use of intermediaries, have increased SCA's focus on, and facilitated for, collaboration. Further, it has contributed to create a structure, clear routines and processes for open innovation. As a result, the initiative has increased the number of collaborations between SCA and external sources. Finally, SCA wanted to use external collaboration in order to boost their innovation capability. With the belief that new knowledge is created when interacting with others, the increased number of collaborations is a good way of boosting their innovation capability.

Collaboration and Communication - MSF Sweden Innovation Unit

The MSF Sweden Innovation Unit is a unique setting for innovation activities. Mainly because they have a wide focus of innovation, meaning that the innovation projects can treat everything comprised in humanitarian work such as medical equipment, transportation solutions, and field hospitals. Since they do not have a specific product or service area it is not possible to staff an in-house product development department. Additionally, there are general guidelines within the organisation for how many employees there should be on an administrative level in relation to the number of field workers.

Because of above-mentioned reasons, MSF Sweden Innovation Unit cannot develop or commercialize innovations internally. Therefore, they are completely dependent on external partners for specialist knowledge, product development efforts, production, and even financial support. Further, MSF is a non-profit humanitarian organisation and have expressed that their fundamental values of humanitarian rights must be shared with their partners, which is not always easy to achieve given the commercial focus of the private sector.

Practice

MSF Sweden Innovation Unit has developed an innovation model, which allows them to address most kind of problems, i.e. they do not specialise in a certain area. The model provides them with the necessary competences and resources to develop innovations. This is done by identifying the root of the problems from a user perspective, combined with a multi-disciplinary, cross-organisational approach. Further, MSF Sweden Innovation Unit aims to provide the long-term commitment and bridge the internal/external gap. This is needed due to the fact that the operationally engaged employees in MSF does not have time for more complex, long term innovation-oriented activities when working with urgent problems in the field.

In order to create possibilities to **utilize external innovation partners**, MSF Sweden Innovation Unit stresses the importance of networking. Since they do not know which areas that could be of interest in the future they have a wide scope of potential partners and do not rule out anyone fulfilling their basic criterion. The criterion is, as mentioned above, that humanitarian values must be shared and thereby industries such as oil and arms are ruled out. Further, due to limited resources there is a need to prioritize between potential partners while still keeping an open mind of which areas of expertise that might be of interest. Therefore, they find possible partners among universities, independent research groups, and companies within many industries.

"If you too early on discuss how to share ownership of the innovation, the probability of a fruitful collaboration is low. However, if you do not discuss ownership the probability of people disagreeing is high, if the innovation turns into a commercial success."

However, in order to build long, fruitful collaborations MSF Sweden Innovation Unit stresses the need to early on, in **discussions with potential partners**, agree upon what is expected of each party. In the focal case, these discussions should include how much resources each party should contribute to the project, what respective roles they should take on, and what the time frame of the collaboration should be rather than how the ownership of the idea should be shared. However, the financial incentives from companies should not be misused or contra productive and it is of importance to agree that the final results will be of benefit for the organisation or general humanitarian causes. Further, MSF Sweden Innovation Unit highlights the importance of not misleading potential partners by promising too much early on in the process in order to avoid disappointment and loss of possible collaborations. This is due to the changing need of external resources.

When initiating a partnership MSF Sweden Innovation Unit believes in creating win-win situations in order to gain a fruitful collaboration. Further, MSF Sweden Innovation Unit highlights the need for mutual trust between the collaborating partners in order for long-term relationships to be possible. To assure this, MSF Sweden Innovation Unit aims to institutionalise relationships by creating natural bonds between people at different levels in the collaborating parties. The main reason is that the relationships should not be dependent on two individuals due to the risk of the relationship being lost if, for example, one of these individuals changes jobs.

Results

The initiative is relatively new and no products or services have been implemented in field at this point. However, MSF Sweden Innovation Unit has several on-going projects, currently in the development phase, where major progress is being made. Further, MSF Sweden Innovation Unit expressed that their work has contributed to a change in the mind-set, within MSF, when it comes to innovation and increasing innovation capability of the organisation. Finally, due to the drastically increasing engagement in innovation activities, MSF Sweden Innovation Unit's possibility to influence the organisation on different levels has grown.

IP and Knowledge Management - NCC Roads

NCC Roads, one out of four business areas in NCC Group, is a main actor on the Nordic market within the roads and road services industry. As many businesses within the construction industry, NCC Roads has for many years struggled with problems associated with being a big player operating on distributed local markets. One of the main problems NCC Roads experienced was to coordinate the innovation activities in all business units and to make them strive towards one common goal. This implies that the business units were not given any guidelines regarding target areas of innovation and

hence the company's product and service offerings widely differed between the local markets. As a result, customers perceived NCC Roads differently across countries.

Moreover, the diverse offerings presented to the markets were also a result from low collaboration between the business units and hence the non-existing knowledge sharing between them. However, since all innovation development costs and IP costs were ascribed to the different business units, NCC Roads experienced low willingness to share knowledge between units. Therefore there was a need for a clear coordinated plan for business development and innovation activities between the Nordic countries.

Practice

In order to address the above-mentioned problems, NCC Roads acknowledged the need for a coordinated plan while working with business development and innovation. To achieve this goal, NCC Roads identified two major areas in need for change. Firstly, how to organise the company on a Nordic level and thereby facilitating for collective business development. Secondly, how to assure that business development and innovation are guided by the overall business strategy in all seven business units. As a first step, NCC Roads mapped the present state of technology development and analysed the relation to customer needs and the overall business strategy of NCC Roads. As a result of this, a need for a central business development council was identified. The business development council was of cross-functional character and contained senior employees mainly from technology and marketing departments but also line managers and supporting departments such as IT, sales, and purchasing.

To further develop and ensure a consistent approach to business development and innovation NCC Roads divided the business development council into three new business development groups; stone material, asphalt, and road services, all being a part of the business area's processing chain. The tasks of the new business development groups were e.g. to coordinate; innovation activities that include more than one development area or innovations that do not clearly belong in any development area but have too much potential to neglect. These business development groups improved the transparency between the corporate level and the business units but also between the different development areas. However, the main reason to establish the new business development groups were to address business development and innovation on a Nordic level in order to achieve more joint offerings to different local markets.

To ease the collaboration and collective business development, NCC Roads reorganised the organisation to have three divisions, one per development area, instead of previously seven business units addressing all development areas. As a result from decreasing the number of business units, the effort needed to coordinate the activities between different business units was reduced and the employees experienced the company to be more transparent. Hence, NCC Roads improved their chances of achieving collective and targeted business development and innovation.

In their strive to achieve more joint offerings on a Nordic level, following the creation of the business development council, NCC Roads acknowledged the need for a clear and consistent intellectual property rights strategy. The main reason for an IPR strategy was to ensure that all new products and services were conceptualised and trademarked in a manner that **highlights the added value** provided to customers. As a first step NCC Roads decided that all costs related to IPR and innovation projects, beneficial to all local markets, should be centralised in contrary to before when these costs were carried by the local sites. By carrying the IPR and development costs centrally, NCC Roads could require the local sites to involve other interested sites during the development process but foremost to

share developed innovations with the rest of the company. Further, by gathering all IPR on a corporate level, NCC Roads achieved better knowledge of which trademarks were being used on the local markets and which products were patented. As a result, NCC Roads could ensure that all business development and innovation activities were guided by the overall business strategy and that all new products and services were **patented and trademarked** in a beneficial way.

Moreover, as a second step to ensure that the local sites shared their innovations, NCC Roads established a new team with the sole purpose to handle all IPR related tasks. The main reason to establish the team was to ease the business units' administrative burden that the new IPR strategy implied. By establishing the new IPR team, thereby freeing up time for innovation activities at the business units, NCC Roads experienced that the local sites more willingly shared their innovations.

Results

By decreasing the number of business areas and establishing the new business development teams, NCC Roads has improved the transparency within the company and eased the knowledge transfer between different local sites. This has enabled the company to more jointly address business development and target innovation activities towards a common goal. As a result from the improved transparency and knowledge transfer between local sites, the employees have a better insight to what innovation activities are being performed at the company. According to the employees at NCC Roads, this has improved the perception of working in an innovative company and the enthusiasm of participating in innovation activities. Further, by ensuring that the local actors are pursuing the same objectives, NCC Roads has experienced a higher number of innovations beneficial to the entire company and not just to a local actor.

Moreover, by gathering all existing IPR on the corporate level, NCC Roads has managed to systemise their product and service portfolio and hence create a more collective product and service assortment to all markets. This has further enabled the company to conceptualise their products and services into overall solution offerings with a clear connection to the business strategy. As an effect of joint offerings to all markets, NCC Roads has been able to standardise the marketing material used when launching new innovations or presenting new offerings to customers. By doing so, NCC Roads has ensured that NCC is promoted as a company regardless of where the product or service is sold.

Further, by implementing the new IPR strategy and establish the IPR team, NCC Roads has ensured that all innovations are being trademarked in accordance to *"Trademarks and patents, it matters. It makes impact."* existing products and services and protected in a feasible manner. More than protecting innovations from infringement, NCC Roads has experienced that IPR are of great value when marketing the innovation and that the company is perceived as professional by both customers and competitors.

Finally, according to NCC Roads the new way of conceptualising overall solution offerings and using IPR as a way to differentiate themselves from competitors have been decisive to many customers when choosing contractor. Hence, the implementation of an IPR strategy has increased NCC Roads chances of appropriating the returns from innovations but also facilitated knowledge transfer between business areas and hence increased their innovation capability.

Resource Management - Axis Communication

Axis Communications is the world leading company in network video and has especially revolutionised the video surveillance market by driving the shift from analogue to digital systems. Over the last few years, Axis has experienced rapid expansion and more than doubled the number of employees. Today Axis aims to continue addressing innovation in a visionary and radical manner in order to stay in the forefront of technology shifts and keep their position as a market leader in the surveillance technology industry. Hence, their aim is to balance radical innovations with current business model and expectations from the market.

As the company has expanded, the need for formalisation and effective operations has increased. As a result of this Axis experienced problems to dedicate time and resources to innovation activities, especially of a more radical nature, due to the increased need to satisfy existing customers. Further, the higher degree of formalisation and streamlining of the organisation implies a longer way from idea to implemented innovation. Axis expressed an increased risk of rejecting innovative ideas in a too early stage and hence miss out on exceptional opportunities due to lack of resources to further develop the idea before evaluating it. This consequently leads to less competitive advantages linked to technology superiority and hence increase the risk of being challenged by new firms for the position as a market leader within the industry.

Practice

In order to address the above-mentioned problems and stay innovative despite the increased need for formalisation and streamlining, Axis has chosen to define a **new innovation unit**. The aim of the new innovation unit is to explore and develop new concepts that would target existing and new customers and their needs in a time frame of 36 months or more.

The initiative started by, informally, giving a few exceptionally skilled and entrepreneurial engineers the task to address innovation in a longer time frame. However, to further ensure that Axis would reap the benefits from these innovations, the new innovation unit was formally established. The team consisted of both generalists and specialists, from cross-functional departments, with exceptional skills and a large dose of innovative thinking. These were skills and characteristics that could not be utilized optimally in other parts of the organisation due to the higher degree of formalisation the company now experienced. Further, the scope of innovation was widened not only to target network video but rather "network scene description". The reason to widen the innovation scope was to facilitate more visionary and radical ideas. By giving these entrepreneurial engineers the opportunity to act more visionary, experimenting with new ideas and testing hands on prototypes in their day-to-day work, Axis aimed to utilize their exceptional skills in a more optimal way.

However, in order to leverage from the new concepts developed by the unit, Axis needed to integrate them in existing and new product portfolios. To achieve this, the innovation unit needs to be in close collaboration with the product development unit since it is the product development team that finalise the new concept and present it to the market. To further ease this integration of concepts that did not fit into the regular development areas, Axis appointed a product manager of new opportunities. This product manager is responsible to further develop the concepts from the innovation unit with complementing market and business case studies. When developed, the concept is either reallocated to an existing product line or kept in the product portfolio of new opportunities for commercialisation.

The innovation unit develops a new idea until proof of concept has been reached, implying that the concept has been proven to; have a manageable risk-level, being producible, and being commercially

viable. How well-developed the new concepts are when leaving the innovation unit depends on the radicality of the new concept, since the more radical a concept is the more developed it needs to be to achieve proof of concept. When proof of concept has been reached, there are **three possible paths** for a concept namely; accept and transfer to product development, further test and develop, and reject or put on hold. Which path chosen depend on the assessed market potential and resource situation in the receiving department.

Moreover, the role of the innovation unit is not to act as an innovation funnel and develop externally generated ideas. If an employee, from another part of the organisation, contacts the innovation unit with a promising idea the unit rather facilitate an innovation-friendly working environment where the employee can come to work on the idea. The reason of not developing external ideas is because, according to Axis, the success of an innovation project is directly dependent on the dedication and determination of the project owner. Since there is no one as passionate about the idea as the innovator, it is reasonable that this person should be developing the idea with support from the innovation unit that is more used to develop new concepts.

Results

By implementing the new innovation unit Axis has managed to shorten the way from idea to implemented innovation although experiencing a higher level of formalisation in the organisation. The set-up of the new innovation unit also allows for more visionary and radical thinking resulting in an increased number of breakthrough concepts that would, in other departments, have been rejected in a too early stage. This is due to the perseverance that is characterising the innovation team and the ability to systematically develop concepts that is not an immediate success. According to Axis, the perseverance is key when working with innovation of a more radical nature. However, the main advantage from implementing this kind of innovation unit is that this department rather can focus on increasing customer value than chasing competitors' innovations.

According to Axis, key aspects needed when implementing the innovation unit are patience, trust, and legitimacy. If the top management of the organisation do not express strong trust in the new unit and support as well as protect the initiative from becoming too operational, there is a great risk of losing the entrepreneurial feeling that is aimed for. Further, top management cannot require results in the near future; therefore the initiative should be assessed as a long-term investment. Lastly, Axis expressed that the unit needs to have legitimacy in the rest of the organisation to ease the implementation of new concepts. Legitimacy is achieved from recruiting top individuals, known to the rest of the company, and by increasing the exchange of services with other departments.

Resource Management - Sandvik Coromant

Sandvik Coromant is a global decentralised organisation, which has experienced difficulties to seize the knowledge and increase transparency between local departments. Especially, they had difficulties to work cross-functionally and to manage ideas that belong at another department. Further, Sandvik Coromant aims to increase their innovation capability on a global level. Therefore, they wanted all employees to be able to contribute with ideas in order to fully use all resources within the company.

However, the problem was not generating new ideas, instead Sandvik Coromant experienced that ideas existed within the company but there were difficulties with turning ideas into innovations. One reason was that the employees did not know where to turn with a new idea or they hesitated to share their initial ideas with their managers. Additionally, there was little room to develop the idea further and the idea was therefore not presented in the right form in order to get it to the next level in the

innovation process. Sandvik Coromant experienced that they lacked resources to test and realize ideas, especially if these ideas did not fit within the focal division.

Practice

Due to above-mentioned issues and with the support from top management an innovation initiative started. An external analysis was made in order to gain insight to how other companies manage these issues. Additionally, the current state was analysed to find out what the perception of innovation was among the employees at Sandvik Coromant. A proposal of **innovation coaches and idea ambassadors** was developed and presented to top management in order to gain support from the top hierarchy of the company. When the proposal was approved, the search for suitable idea ambassadors began. Further, the chosen ambassadors have been part of developing the initiative in order to embed the approach among them.

The assignment as idea ambassador was created to increase the employee's commitment to innovation, this as both a top-down and bottom-up approach are incorporated. To make the initiative more manageable, the implementation was on a global level but focused on the Product Management and R&D division. The objective was to increase the level of radicality of the innovations. However, if the innovation targets both new technology and new markets, Sandvik Coromant expresses a need for support from other business areas of the Sandvik Concern or from external partners. This due to the lack of resources handling radical innovations targeting both new technology and new markets.

The implementation started three years ago and was lead by three innovation coaches who had the responsibility to structure and create approaches for innovation work. This was done by, with the top managers support and in collaboration with the line managers, recruiting idea ambassadors at appropriate sites in the global organisation. Further, the innovation coaches are responsible for educating and supporting, mainly the idea ambassadors but also the line managers and others involved in innovation activities. Thereby spreading the commitment to innovation throughout the company. They also work as facilitators for innovation by supporting the organising of idea challenges and with facilitating creativity workshops. An employee can request an idea challenge when they have a need for new ideas within a specific area. When requesting an idea challenge, the questioner needs to have the resources to implement the ideas due to the risk of losing involvement and dedication to innovation activities if no subsequent action follows upon the new ideas. Finally, the innovation coaches help with receiving ideas, and if necessary, further distribute them to the appropriate department.

The line managers are the ones responsible for taking care of ideas at their focal department. Further, they should give feedback and distribute ideas but they are also the ones making decisions of whether or not to proceed with an idea. Therefore, the innovation coaches educates the line managers in; how to receive ideas in a good and inspiring way, how to inspire and develop innovation activities, and how to create more and better ideas.

The idea ambassador is quite a new role, which have existed for approximately a year, with the purpose of spreading knowledge about innovation and the way of working with innovation at department level in the company hierarchy. The idea ambassadors are local actors mainly focusing on the early stages of the innovation process. Further, the idea ambassadors support the line managers and shall encourage discussions among employees in order to embed the innovation focus in the organisation. The idea ambassador is therefore another person to turn to with new ideas in addition to the line manager, which solves the problem with employees who do not want to turn to their managers with an idea right away. The idea ambassadors have no responsibilities for generation or evaluation of

ideas, instead, they should be able to receive ideas and guide the idea owner during the early innovation process. Further, the idea ambassador should help with networking and sharing of ideas, not belonging in the focal unit, to other departments. The idea ambassadors should also communicate information from the innovation coaches and receive and give feedback to the overall initiative.

Further, since the ambassadors have more face-to-face contact with employees their existence enables embedding of the innovation focus throughout the company. This first year the tasks have mainly been answering questions and spreading information about the initiative rather than facilitating ideas. However, facilitation of idea generation activities is an on-going project and the idea ambassadors who are interested in learning are now being educated. Currently, those interested get the opportunity to facilitate ideas at their departments together with the innovation coaches or to practice in a smaller setting.

The aim is further to create a network between the idea ambassadors to enable discussions between them, cross-functional collaborations, and exchanges of services such as facilitating idea generation workshops, and distribution of ideas. Therefore, all idea ambassadors have a joint video meeting together with the innovation coaches on a monthly basis where they discuss different topics of innovation. This gives the idea ambassadors the opportunity to, together with the innovation coaches, form their role and get guidance on how to move forward. During these meetings the innovation coaches also distribute joint presentation material in order to both keep the initiative focused and to help the idea ambassadors making the most of their time. Additionally, the idea ambassadors get education in terms of a two-day-conference twice a year but also special courses treating e.g. facilitation of idea generation through workshops.

The first idea ambassadors were found by internal job advertising in order to identify people interested in the assignment, but in the end they were appointed by the line managers. The competences sought for in an idea ambassador were mainly networking skills but also creativity, flexibility and communication skills. Further, these individuals should contribute to an open and innovative climate as well as be able to communicate success stories to others in an inspiring way. The aim was to find a suitable idea ambassador at all local units of around 50 employees, which meant that at least one idea ambassador should be physically in place at every local office. Further, it is important to connect with all people within the group and some natural meeting point should exist between them such as department or local meetings. Finally, today the idea ambassador role is a **10 per cent assignment** at Sandvik Coromant and there are 11 ambassadors among the 600 employees in Product Management and R&D.

"We need the employees to be committed, then you must have one [idea ambassador] at every local site."

Results

The initiative is relatively new and is still in the implementation phase, which limits the current results. However, Sandvik Coromant expresses that more employees talk about innovation and are aware and curious of the innovation initiative, especially because of the idea challenges. An increasing number of employees see the opportunity of changing things through new ideas and that they might be able to make a difference. This lead to an increased commitment to innovation activities throughout the company and also affect the innovation culture in a positive manner. However, Sandvik Coromant points out that it takes time to change the perception of innovation among employees.

Sandvik Coromant has created a structure for idea management and the network of idea ambassadors has improved the cross-functional collaboration within the company. The idea ambassadors, together

with the committed line managers and top managers, have created both a top-down and bottom-up driven initiative. Sandvik Coromant has detected that the idea ambassadors at the smaller sites are the most active and that the needs differ depending on site, implying that the idea ambassador assignment needs to be somewhat flexible in its content.

4.5. Process Factors

Below the results from the case studies about the process factors, Front-end Innovation Process and Back-end Innovation Process, are presented. In the first factor both Alfa Laval and Volvo Group were interviewed. In the second factor The Absolut Company were interviewed.
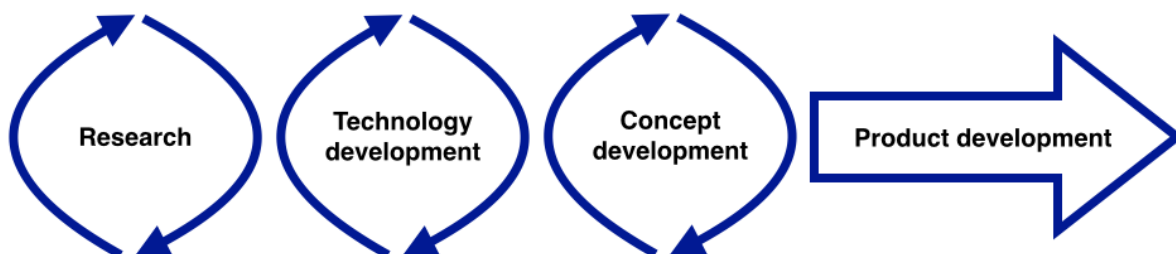
Front-end Innovation Process - Alfa Laval

For many years Alfa Laval have struggled with the development of new products and how the market perceived these. Although being an innovative company, the launch of the new products was constantly delayed with unhappy customers as a result. The prolonged development time resulted in that the company's development projects were more often than not running over budget. Hence, Alfa Laval needed to address the problems of development projects running over time and budget as well as the fading customer relationships without losing their innovative capabilities. Moreover, Alfa Laval experienced that the radicality of their new products were not as good as possible. Therefore the company needed to increase their risk taking when developing new products without affecting the development time negatively.

Practice

When analysing the present state of new product development, Alfa Laval found that there was a main difference between innovation activities and product development. Successful innovation activities are characterised by timing and the possibility to explore new opportunities not obvious in the beginning of the project, while product development is characterised by speed in order to keep the promises made to the market. Hence, Alfa Laval experienced a need to separate innovation activities from product development due to the contradictory characteristics.

In order to systematise the innovation activities and increase the radicality of new innovations, Alfa Laval started by designing the process in which new ideas should be assessed and developed. The new process was divided into four phases, beginning with research and followed in order by technology development, concept development, and product development, see figure 3. However, incremental innovations do not follow the process but rather start in product development due to the low risk and uncertainty of such projects. If the project should start in the product development or in the research phase hence depend on the level of uncertainty, risk, and the expected throughput time.

Figure 3: *Alfa Laval's innovation process consisting of four phases; research followed by technology, concept and product development*

The research phase is characterised by **idea generation** and evaluation. New ideas and theories are presented, tested and evaluated. The ideas entering the research phase can be produced either in the team working with research, other departments of the organisation, or externally. The innovation team working in the research phase is of cross-functional character due to the need of assessing new ideas from a varied perspective. The group of decision-makers, who **evaluate and decide whether or not an idea should be further developed,** consists of four senior members of a varied background. When evaluating the ideas the decision-makers map the new ideas by attractiveness, uncertainty, and the estimated time to launch of the new product. However, due to the problems connected to measuring innovations' potential in an early stage, these evaluations of ideas are mostly based on the decision-makers' experience and gut feeling.

In the technology development phase the innovation team starts developing prototypes and new technology needed to realize the ideas that were found appealing in the research phase. If possible the prototypes are tested in their intended environment. By testing the prototypes in their intended environment, the customer value of the new product can be more explicitly evaluated. Hence, the main purpose of the technology development phase is to lower the risk and uncertainty level and to further evaluate the potential of the new idea.

After the technology development phase the idea enters the concept development phase. In the concept development phase the new idea is conceptualised and the concept is presented to intended customers in order to further evaluate the market potential. This phase is characterised by experimentation since finding the, to customers, most valuable concept of the new idea likely needs iterations. This phase also includes evaluating manufacturing possibilities to see if the new concept can be produced in existing production lines or if new production settings are needed. The team working in the concept development phase consists of employees associated to the product development team.

If the risk and uncertainties associated to the developed concept are low enough and the market potential seems lucrative, the concept enters the **product development phase**. The product development phase is characterised by speed to market. When entering this stage of the process, marketing material is being developed and sales are operationalized. This implies that promises of what and when to deliver are being made to customers. Hence, the concepts entering the product development phase must show a reasonable risk and uncertainty level since late or cancelled deliveries might hurt existing customer relations.

However, new radical ideas that do not fit into Alfa Laval's existing business model but are associated with an opportunity too great to neglect are processed through an alternative development process. This process is performed by a cross-functional team consisting of members from technology, sales, and marketing departments in order to, in an early stage, address the conceptualisation and market potential of the new idea. The process has iterative characteristics and aims to achieve proof of concept by targeting and selling prototypes to micro markets. When proof of concept is achieved the concept is integrated in the organisation and further developed by the product development team.

Results

By implementing the new systematised process for working with innovations, Alfa Laval has experienced that projects entering the product development phase are more often than not developed in accordance to the time-plan and budget. Thereby Alfa Laval has improved their customer relationships due to an increased number of timely deliveries. Further, the new process has rendered

in possibilities to allow greater risks in the early stages of the innovation activities. This increases the chances of more radical and lucrative concepts to emerge.

Alfa Laval expressed that the new innovation process has clarified where employees should turn with new ideas but also simplified the feedback process to the innovator. According to Alfa Laval, giving feedback to the innovator about his or hers idea is of major importance to facilitate a more innovation friendly culture in the company. As a testament to the improved innovation culture, Alfa Laval now experiences that more employees from other departments than the research department wants to participate in workshops and other idea generating activities. According to Alfa Laval this is of great importance to increase the number of radical, but also incremental, innovations. Decisive to how many innovation projects to effectively run at the same time, boils down to how much resources are allocated to innovation activities. As, expressed by Alfa Laval, the number of ideas generated is always greater than the number of innovation projects running. Finally, Alfa Laval expressed that there is a need for the innovation process to not be too detailed. The process should act as guidance rather than constraints.

Front-end Innovation Process - Volvo Group

About 10 years ago, Volvo Group acknowledged that the organisation needed to improve their support of innovation activities in order to increase their innovation capability. As a result of this, a new innovation group with the purpose to define how Volvo Group should address innovation and improve the supporting functions was established in 2008 on request from top management. As a first step the innovation group assessed the innovation capability in Volvo Technology, one department of Volvo Group, and identified 10 improvement areas by evaluating the current state. These improvement areas ranged from defining ownership of the innovation activities to how the employees' creativity could be optimally utilized.

Over the years to follow the innovation group experimented with new activities, especially with focus on the early phases of the innovation process, such as innovation jams. The innovation jams were typically 48-hour events, aiming to utilize the creativity among employees and boost a strategically important area with new ideas. However, although top management chose the areas in which the employees were asked to innovate, sometimes there was no receiver of the new ideas when the jam was over. Implying that the process were characterised by pull during the idea generation phase and push during the evaluation and transfer to core processes. As a result Volvo Group experienced that, although some ideas been prototyped and tested on the market, few product managers wanted to or had the ability to receive the new concept. This due to low knowledge about the new concept, high risks implied by innovation work, and lack of resources and processes to further develop the innovations. Volvo Group expressed that they underestimated the "not invented here" syndrome, implying that the affected department sometimes would not dedicate themselves to develop the new ideas because it was not invented there. Hence, Volvo Group experienced a need for a confirmed receiver of the ideas generated in order to keep the enthusiasm among the participating employees and to fully leverage from the new ideas.

Moreover, Volvo Group experienced an increased focus on connecting different business areas to leverage the synergies present between them. As a first step, Volvo Group expressed a need to turn all actions in the organisation into processes characterised by clear deliveries and distinct ownership. In line with this, the innovation group now faced the challenge of creating a clear innovation process focusing on deliveries to the core processes. The purpose of the new innovation process was to make it available and usable to all departments at Volvo Group.

Practice

With the new process focus, three core processes were identified; development, production, and business support. As expressed by Volvo Group all these processes, to some extent, contain innovation activities. To boost these activities with new perspectives and ideas, Volvo Group developed a clear process of how to utilize the internally existing knowledge base in an optimal way to increase the organisation's innovation capability.

As a first step to address the above-mentioned problem areas, the innovation group focused on how to, during the early phases of the innovation process, leverage the extensive knowledge base possessed by the organisation. From earlier years experimentation, the innovation group had identified a number of particularly successful **idea generation** tools to use in order to utilize the creativity and knowledge among the employees. Based on this, the innovation group started the initiative called Innovate. The purpose of Innovate was to support the organisation's core processes in two parts, namely; Ideation and Explore and Accelerate. The Ideation part aims to increase the radicality of innovations within existing product portfolios and business model while the Explore and Accelerate part aims to process and leverage from radical innovations that currently do not fit in existing business model or product portfolio. Due to the experienced problems of finding a receiver of new ideas the innovation group decided that Innovate should be characterised by pull, implying that the innovation activities target specific areas of interest and have a **clear receiver** of generated ideas.

Moreover, the Ideation part consists of three phases; scope, generate, and select. During the scope phase a questioner, most often the same person as the receiver, defines an issue or area of opportunities in need for new ideas. The questioner is

"You need to have a clear scope to utilise peoples' creativity in the best possible way."

responsible of specifying from whom he or she wants to receive ideas. This could, depending on the issue or opportunity area, be a targeted group of employees, the entire organisation, or external strategic partners. Moreover, the questioner is responsible of clearly defining the issue as well as supplying the participating group with inspirational material to prepare them for the idea generation activity.

The choices made during the scope phase implicates what methods and tools to use during the generate phase. Depending on the number of participants, the idea generation activity can be either online, offline or a hybrid of both. Creative workshops are most successfully used when the number of participants is around 10 and these are centralised to one location. As expressed by Volvo Group, the most critical part of such a workshop is how to document the generated ideas. With an increasing number of participants, Volvo Group preferably uses a transparent online tool where people can post and comment on ideas. The comment function improves the collaboration on new ideas and result in more evolved ideas of higher quality. Hence, Volvo Group identified a need for facilitators with the responsibility of asking constructive questions in order to make the innovator improve the posted idea. By having a facilitator commenting on all posted ideas, the barriers for other employees to comment on ideas were lowered. To assure that the facilitators act in a creativity-improving manner, Volvo Group gives all facilitators a short education on how to act online. In the generating phase it is of great importance to not neglect or kill any ideas to ensure that enthusiasm and creativity is not lost among the participants in the focal step.

During the **select phase**, the generated ideas are evaluated and lastly the most prominent ideas are selected and transferred to the identified receiver. When evaluating ideas, Volvo Group assess the ideas by three criteria; business potential, radicality, and viability. Ideas lacking one of the criteria

will most likely be killed. Hence, due to the difficulties assessing innovations' potential, Volvo Group defined four paths for evaluated ideas; transfer to existing project, create new research project, investigate, or cancel. The investigation path implies that, due to the radicality of the idea, more facts are needed to adequately assess the idea. This in contrary to the research project path where needed facts are given but the time to market is too long to transfer to existing projects.

Results

By defining a clear front-end innovation process, Volvo Group has experienced that more generated ideas are being processed and finally commercialised. The main reason to this improvement is that the requirement of a receiver needs to be fulfilled before any idea generation activities are performed. By clarifying the ownership of the defined issue or opportunity area, Volvo Group has further experienced that the effect of the "not invented here" syndrome has been reduced. Further, Volvo Group expressed that the methodology implied by the Ideation part of Innovate, in comparison to before the initiative was started, has increased their skill to generate more innovations of higher quality.

Volvo Group expressed that although the radicality of new ideas has increased, the innovation process at the present state do not support the commercialisation of radical new ideas requiring new business models. This mainly due to the earlier problems of undefined ownership of such projects and the organisation's low appetite for risk. As expressed by Volvo Group, the Explore and Accelerate part of the Innovate initiative aims to define the process of undertaking radically new ideas. However, due to the focus on increasing radicality of innovations in existing business models and product portfolios, such a process has not yet been developed and confirmed. Moreover Volvo Group expressed that the Innovate initiative would not have been possible without the support of the top management. Volvo Group stresses that by implementing the innovation process, the organisation's innovation capability has increased.

Back-end Innovation Process - The Absolut Company

Today The Absolut Company aims to use their strong brand recognition in order to diversify their business by exploiting new innovations. To achieve more radical innovations, in contrast to continuous improvements, The Absolut Company created a new business division with the sole purpose to address new business creation on a continuous basis. Incremental innovations such as new flavours are addressed in the product development departments. Innovations counting as radical innovation are mainly innovations dependent on new business models or processes.

Over the past years The Absolut Company has been struggling with long development times, projects running between 18 and 24 months, and hence high development costs. The long lead-time further implies that addressed markets, with low or no competition at the initiation of the project, might be crowded once the innovation is ready to launch. Hence, the first mover advantage is lost to competitors and the profitability in the focal market decreases.

The Absolut Company also experienced high risks with innovations not reaching its full market potential. The main reason being limited customer understanding. This because the innovations were tested on the market at the end of the innovation process. During the tests valuable insight were reached which sometimes lead to a need for changes of the innovation or even rejection of the innovation. Since the innovation already was fully developed and launched in full scale the cost of changes or rejection was high. Additionally, the funding of the innovation project was allocated, as a lump sum, in an early stage of the process and was often used when the product was tested on the

market. This implied that in order to change the product new financial means needed to be allocated to the product. Further, if the innovation was rejected the monetary losses were high.

Practice

In order to address the above-mentioned problems, The Absolut Company identified two key factors when innovating; "purposefulness" and to "begin with the end in mind". This implies that every action in the innovation process should have a defined purpose and clear deliverables of what to achieve. As a mean to reach these goals The Absolut Company decided to implement an **agile approach**. In the focal case the agile approach is an iterative development process aiming to, by focusing on learning, create insight and understanding during the whole project. Further, the agile approach should be considered as a mind-set focusing on deliverables. In line with this, The Absolut Company has chosen to dispense financial resources throughout the innovation process when deliverables are met and the results indicate market potential. This in contrast to allocating resources for the entire project at the beginning of the process.

The agile approach is based on **experimentation and hypothesis testing** throughout the entire development process. By developing a minimum viable product, MVP, as soon as possible in the innovation process, The Absolut Company has facilitated for testing of new innovations on the market. The accuracy of formulated hypotheses are tested by launching the minimum viable product in specific areas where the penetration rate of targeted customers are high. By studying customers' buying behaviours in a real marketplace, new insight are gained and further used to refine the innovation before launching in full scale.

To support the implementation of an agile approach, there is a need for a well-structured innovation process to be in place. However, the process needs to be iterative due to the focus on experimentation to be able to adapt to new insights collected during the process. Further, The Absolut Company emphasised a working environment characterised by openness and enthusiasm to e.g. reap the benefits from feedback from colleagues, when working with an agile approach. However, due to the focus on deliveries, communication, and collaboration the agile approach can also lead to a more supportive innovation culture per se.

Results

By implementing the agile approach, The Absolut Company has lowered the barriers of starting innovation projects. The lead-time for a project, from idea to fully launched innovation, has decreased by almost 50 per cent. This implies increased chances of gaining the first mover advantage into new, unexplored markets. Further, by applying a more experimentative approach and testing hypotheses on real customers in early stages of the development process, The Absolut Company expressed that they have managed to gain a deeper customer understanding. Hence, the chances of the innovation becoming a success when fully launched have increased. By presenting a minimum viable product to the market in the early stages of the development process, The Absolut Company has decreased the costs of making changes to the innovation or even cancel projects due to market rejection. Cancelling innovation projects due to early insight on market rejection increases the possibility to reallocate human and monetary resources to other projects, and hence minimize the losses due to unsuccessful innovation projects as well as maximize the output of possessed resources.

5. Discussion

In this chapter all factors will be discussed separately, following the previously used disposition. The discussion part of each factor will address the identified key management areas presented in theory and summarised in table 1, page 19. The key management areas are highlighted and discussed based on a comparison between the practices and the presented theory. The management areas are assessed from an importance to practice perspective based on the case descriptions, see table at page 77. Further, possible additional management areas, identified from the cases are presented. Finally, the detected interactions with other key factors are presented, see table 3 page 78.

5.1. External Factors

Below the two chosen cases within the factor Organisational Context Management are addressed in order to discuss the by literature identified key management areas.

Organisational Context Management

Acquiring customer insight is, by many scholars, considered to be of great importance when innovating (see e.g. Abernathy and Utterback, 1978). Since it is not possible to fulfil all customer needs there is a need to focus on the most important customers, i.e. a target group (Shipano, 1988). It is also argued that customer insight only leads to incremental innovations (Morris, 2013). Scania expresses that customer insight does not lead to innovation of a radical nature. However, customer insight is still of great importance to gain knowledge about the customers' needs. In order to understand the needs it is essential to first understand the product. Scania has, by giving all engineers truck licenses, increased the engineers' product understanding and hence made it possible to acquire customer insight. Moreover, Oriflame emphasises the need for a clear target group, and has focused their innovation activities on emerging markets. However, Oriflame does not aim for radical innovation, instead they scan the chosen market for early customer insight and follow proven business areas. This implies a difference between a technology intensive and a consumer good industry. Scania, who operates in an industry where the product is used by few people and consists of technologically advanced components, needs to have a basic understanding of the product in order to gain and use customer insight. Oriflame, on the other hand, is providing everyday consumer goods and needs to screen among the consumers after the most important customers to manage the extensive amount of customer insight available in the market. Therefore, it appears as both companies believe customer insight to be an **important** management area although insufficient to increase the radicality of innovations and that customer understanding rather is the information to strive for.

To **obtain deeper customer understanding** is closely related to customer insight, however, instead of listening to the customers their behaviour is observed to detect e.g. unexpressed needs (Ulwick, 2002). Customer understanding is an important aspect to innovation work, since it leads to more radical innovations that contains high value to the customer (Abernathy and Utterback, 1978). Scania reinforces the statement of customer understanding being an important aspect of innovation work, since it reduces the risk of not addressing the most lucrative customer needs. Further, the high technological complexity implies difficulties with obtaining customer understanding without first having a basic knowledge about the product. The truck license initiative increases the product understanding at Scania. However, to obtain deeper customer understanding the product has to be studied in real life settings. This is done through the Early Warning System initiative, which provides the opportunity to meet and observe the customers. In line with this, Oriflame also argue that customer understanding is important and pinpoints the importance of letting the customer understanding guide the innovation work, since it reduces the risk for rejection of the innovation late

in the process. This implies that the two companies both assess customer understanding to be a **very important** management area, in order to increase the organisational innovation capability. It is notable that two companies in very different industries expresses the area to be very important to innovation, hence, it is reasonable to believe that this is important in most industries.

Political, technical, economical, and social aspects should be managed since these might imply new business opportunities (CEN Standard, 2013). Further, Yüksel (2012) argues that the environment of the company should be taken into account when formulating a strategic approach to handle e.g. macro events. Scania addresses the importance of screening for megatrends, and expressed that scenario thinking can be useful when doing so. Scania consider megatrends to be very important in order to not miss out on new opportunities. In line with this, understanding mega, macro and micro trends that might affect the business is expressed as very important by Oriflame, since this enabled the company to pinpoint the most attractive business areas to address. Due to the fact that both companies address trends, it appears, as trends are **very important** to manage to increase the innovation capability. Finally, the difference between the two cases, where Scania focuses on megatrends and Oriflame on mega to micro trends, might depend on Oriflame's higher sensitivity to volatile trends due to selling consumer products.

Abernathy and Utterback (1978) argue that in order to address the environmental changes, the new information needs to be spread and understood in the entire organisation. Further, how a company uses the information given by the business environment and learns to **adapt to this information** may be the only sustainable competitive advantage (Stata, 1989). Scania addresses the issue by letting the engineers in the Early Warning System write weekly letters reporting back to their colleagues, as well as immediately reporting larger problems back to the home office. The first implies a more general information sharing while the latter implies knowledge sharing with instant action, hence adapting to the information. Further, when returning the engineers uses their expanded knowledge base when interacting with others, and knowledge is transferred between colleagues. Oriflame also addresses the importance of spreading the information throughout the company, and collaboration were considered the most effective way to facilitate such knowledge transfer. Further, all new innovations were to be guided from customer insights and trends, which implies adapting to the external information. Concluding, both companies' expresses the need to spread and adapt to the information and the management area could therefore be considered as **important** to practise.

Interaction

By implementing the two above described initiatives, Scania expressed that the **Innovation Culture** was positively affected. This due to the increased understanding of other employees' challenges, together with the increased openness when it comes to sharing knowledge. In line with this, Oriflame have experienced an increased enthusiasm among the employees, due to the clearer focus of innovation gained from e.g. greater customer understanding. Further, both companies express a need for **Collaboration and Communication** and **Knowledge Management** in order to spread the information throughout the company. Lastly, Oriflame also expresses that the business environment is important to consider in the **Innovation Strategy,** to target innovation towards strategically important business areas. However, the Innovation Strategy is also important in order to e.g. identify strategically important markets and hence the scope of the environmental screening.

5.2. Organisational Factors

Below the two chosen cases within the factors Innovation Strategy and Innovation Culture are used to discuss the by literature identified key management areas.

Innovation Strategy

Building a strategy on competition will only lead to incremental improvements, since these strategies assess what competitors do and strive to make it better (Kim and Mauborgne, 2004). Therefore, companies must break out from the competitive and imitative trap and strive to **steer towards value driven innovation,** by emphasising customers, not competitors (Kim and Mauborgne 2004; Govindarajan and Trimble, 2007). Uponor expressed that the changing competitive environment, due to distributors becoming competitors, had raised the question of how to increase the value of their offers to the customers. Although this was only briefly discussed in the interview, it was clearly one of the main reasons of Uponor's strive to become more innovative, to increase their competitive advantage. It is therefore reasonable to believe that value driven innovation is **important** in order to increase the innovation capability of the company.

An organisation should **focus on their internal capabilities** to build a good foundation for a long-term strategy. This because the environment is continuously changing and an external focus is not appropriate (see e.g. Grant, 1991). In line with this reasoning Uponor chose to collaborate with an external research group, being experts in the field of innovation management, to map the present state regarding innovation capability. Building on this new knowledge, Uponor could assess what actions were needed to increase the organisational innovation capability and hence start formulating a systematic action plan for how to address these. Thereby Uponor used the internal capabilities as a starting point when addressing the problem. Hence, it appears as focusing on internal capabilities is **very important** when formulating an innovation strategy to create means for how to reach the innovation goals. However, as argued by Uponor, this only constitutes the "how are we going to reach our goals"-part of the strategy, and hence there is also a need to address "what are we trying to achieve".

Abraham and Knight (2001) argue that successful companies tie their innovation activities to the short and long-term goals of the organisation, meaning focusing their innovation efforts on a number of strategic opportunity areas. Hence, there is a need for a clear **link between the innovation strategy and the overall business strategy**. Further, the innovation strategy should work as a framework for innovation work (Sundbo, 1997). By having the top executives formulating the innovation strategy, Uponor ensured that the opportunity areas chosen in the innovation strategy did not extensively differ from the organisation's overall business strategy. This due to the fact that the same executives were formulating the innovation strategy and the business strategy. Further, as the innovation strategy works as a framework for innovation activities, the uncertainty connected to innovation has been reduced and managers are more confident to undertake such work. Hence, it seems reasonable to believe that linking the innovation strategy to the overall business strategy is **very important** to lower the barriers to innovation and answering the question of "what we are trying to achieve".

Interaction

Uponor expressed that by formulating the innovation strategy, the uncertainty of undertaking innovation work was reduced due to the guidance implied by the strategy. As an effect of this, the employees at Uponor showed greater enthusiasm regarding innovation activities and hence the **Innovation Culture** improved. By involving an external research group to map the present state of internal capabilities, the innovation initiative gained legitimacy among the employees, and especially

top management, at Uponor. This further introduced a series of KPIs by which the internal innovation capability could be assessed. Hence, Uponor has enabled for follow up **Measurements of Innovation Performance** from an internal capability perspective. Moreover, the gained legitimacy and the improved innovation culture has eased the allocation of resources to the innovation initiative. Uponor expressed that this has been essential in their strive to improve the organisational innovation capability. Hence it is reasonable to believe that there is a strong connection between Innovation Strategy and **Resource Management**. Implying that a clearly formulated strategy for innovation guides and eases the allocation of resources to such work.

Innovation Culture

Creating an innovation culture can be defined as **creating organisation-wide values, norms, and practices that support innovation.** The culture should encourage e.g. risk-taking and openness to new ideas (Herzog, 2011). Volvo Cars wanted to increase the awareness of innovation and boost the employees' confidence and innovation capability. By addressing innovation throughout the entire Body and Trim's R&D department, and letting all 700 employees participate in the SPARK event, it can be argued that Volvo Cars tried to create organisation-wide (Body and Trim) values and norms regarding innovation. Due to letting all employees participate in the initiative, Volvo Cars has increased awareness of innovation throughout the department, including those not normally participating in innovation activities. Hence, it is reasonable to believe that making the initiative organisation-wide is **very important** in order to improve the innovation culture in the entire organisation.

According to Van de Ven (1986) human beings and organisations, by nature, focuses on existing practices and harvest rather than to pave new directions. Hence, there is a need to **trigger individuals to innovate**. Volvo Cars has mainly focused on this aspect with the SPARK initiative. By triggering the employees to innovate, they believe that those not used to this kind of activities will get the opportunity to test their creative capability in a less exposed environment. This has lead to employees learning how to innovate and decreased the insecurity about generating and sharing ideas in the future. This implies that triggering individuals to innovate is **very important** to increase the organisational innovation capability.

Create a commitment to innovation from top management is in the literature mentioned as an important aspect to organisational innovation capability, since these executives decides the amount of resources spent on innovation activities (Daellenbach et al, 1999). Further, the behaviour among the managers is often reflected in the engagement in innovation activities throughout the company (Montalvo, 2006). Volvo Cars expressed that the Body & Trim's management group is supportive to innovation work, and that it has been **very important** during the initiative. Volvo Cars highlights that top management support increases the chances of an idea to be produced, and resources are more likely allocated to innovation activities. Moreover, due to the successful outcome in terms of ideas, the SPARK initiative has itself contributed to increased commitment to innovation activities among top management.

It is argued that there is a need to **create incentives for employees to innovate** (Hellman and Thiele, 2011). In order to motivate individuals to innovate there must be room for failure in the incentive system (Manso, 2011). Volvo Cars has not addressed an incentive system per se; however, they make sure to sign all ideas with the inventor's name. This implies that if an idea is successful, the inventor will get credit, which in turn implies incentives for employees to share their ideas within the organisation. In this line of reasoning it appears to be **important** to create incentives for employees to

innovate. However, an incentive system does not require monetary rewards but rather, for example, to ensure that credit is given where credit is due.

Added Management Areas

The company consists of individuals, hence there is a need to spread a positive attitude towards innovation among these individuals to increase the Innovation Culture. Volvo Cars therefore expressed a need for innovation enthusiasts that have the ability to engage others in innovation activities. This implies a need for an additional **very important** management area, namely **support of innovation enthusiasts**. Hence, these enthusiasts must get the opportunity to involve employees in various innovation activities. This mainly means giving a few people the time and resources to foster the Innovation Culture through e.g. creativity initiatives.

Interaction

The described initiative at Volvo Cars is clearly dependent on **Collaboration and Communication,** due to the fact that all employees form groups in order to participate in the initiative. The ideas are presented in the groups and all participants are welcome to elaborate on and discuss the ideas. Finally, after the event, the group are assigned the task to elaborate on one chosen idea, highlighting the need for collaboration and communication. The initiative is resource intensive, due to engaging all 700 employees, implying a need for **Resource Management**. It is reasonable to believe that the outcome of the initiative would have been affected negatively if the innovation-drivers would not have gotten the resources to fully engage all employees in the initiative. During the interview, Volvo Cars also mentioned the importance of **Organisational Context Management** since the first SPARK cycle begins with customer interviews and studying the market, and thereby exploring new opportunities provided by the business environment.

5.3. Enabling Factors

Below the cases within the factors Innovation Performance Measurement and Management, Collaboration and Communication, IP and Knowledge Management, and Resource Management will be compared with the literature. Hence, the identified management areas will be addressed, assessed as well as complemented if necessary.

Innovation Performance Measurement and Management

From the literature two management areas related to Innovation Performance Measurement were identified, namely; **measure innovation** and **use measurements to increase the organisational innovation capability**. The nature of innovation implies a venture into the unknown. Hence there are difficulties with e.g. measuring idea potential in an early stage of the innovation process. Morris (2008) points out that measuring market potential at an early stage, might lead to organisations basing their decisions on optimism instead of realism. One of the biggest problems with measuring innovations is the abundance of approaches and tools available. However, there is none that is sufficient to truly capture the overall progress in innovation. (Mankin, 2007). Lastly, Morris (2008) argues that the results from the innovation measurements should be used to facilitate for learning and improvement of the innovation capability.

Although many organisations had addressed this key factor, no prominent initiative could be detected during the screening process. This might be due to the above-mentioned difficulties of measuring innovation, which could imply organisations not finding a good practice or choosing not to address the factor. Further, it is reasonable to believe that organisations that focus on increasing their innovation capability probably do not start with addressing measurement of innovation, since this

implies that there are some sort of result to measure. Hence, the absence of a prominent initiative within this area might be explained by the relatively new innovation initiatives among the interviewed organisations.

Collaboration and Communication

The discussion of Collaboration and Communication will as before be divided into two parts, where internal and external Collaboration and Communication are treated separately. Further, both parts will be summarised and an additional management area presented.

Internal Collaboration and Communication

Van de Ven (1986) argues that innovation is not an individual activity. Therefore, there is a need for a network-building effort when it comes to creation, adoption and sustained implementation of ideas among people both within, and in the larger context of the organisation (Van de Ven, 1986; Björk and Magnusson, 2009). This implies that managers should **encourage collaboration between individuals**. SCA is of the opinion that by collaborating through the entire innovation process, a wider knowledge base is used and thereby facilitating innovation. SCA has enabled for collaboration, mainly in the idea-generating phase, through an internal digital collaboration platform. The platform has; enabled a network of active individuals, facilitated for collaboration of ideas, and connected people from cross-functional departments. This has, according to SCA, lead to an increasing engagement to innovation activities among the employees, as well as an increased number of ideas generated. In line with this reasoning, it can be argued that encouraging idea sharing and collaboration between individuals is **very important,** to increase the organisation's innovation capability.

Innovation implies change that affects people differently, hence there is a need to manage change and reduce uncertainty through communication (Fidler and Johnson, 1984). In line with this, Basoglu et al (2013) argue that communication can be used in order to change and direct behaviours. Moreover, communication can facilitate idea generation, be a catalyst for increasing the diffusion of ideas, and positively influence the customer. Following this line of reasoning, there is a need to **facilitate collaboration through communication**. SCA has created an idea collaboration platform, which enables employees to communicate; problem areas, possible solutions, and feedback on solutions, within the global organisation. Further, SCA expressed, that in order to increase the activity on the platform communication is of essence. The company has managed to raise the awareness about the collaboration platform and idea challenges by, foremost, targeted communication but also mass communication. Following this line of reasoning, communication is **very important** to facilitate for collaboration throughout the company, and hence increase the organisational innovation capability.

Communication can be used to reduce uncertainty and decrease resistance to innovation. This implies that organisations' success to implement and develop new innovations is strongly determined by the amount of resources spent on organisational communication. (Fidler and Johnson, 1984). Hence, there is a need to **manage costs of collaboration and communication**. This was **not addressed** during the interview with SCA, which might imply that the cost of collaboration and communication is not important. However, it is reasonable to believe that the costs are calculated and that by changing to demand driven challenges, the costs of collaboration have decreased. Nevertheless, no conclusions can be drawn about the importance of managing costs due to the lack of information.

External Collaboration and Communication

Chesbrough and Appleyard (2007) argue that open innovation, facilitated by external relationships, can produce superior products relative to products produced by a smaller number of individuals from a homogenous group. Therefore, there is a need to **encourage external collaboration between individuals**. SCA expresses that open innovation is needed in order to gain new influences, ideas, competences, and resources. They are actively approaching potential partners as well as passively receiving suggestions, with their initiatives using intermediaries and the open innovation portal. By using intermediaries, SCA is approaching not only their existing network but also new potential partners, to receive help to solve problems or address new opportunity areas. MSF Sweden Innovation Unit are also actively searching for potential partners, since they are dependent on external partners to develop and commercialise innovations. Hence, both organisations actively search for external partners and are encouraging external sources to innovation. However, due to their different circumstances, SCA uses open innovation as a complement to internal innovation while MSF Sweden Innovation Unit is dependent on external partners in all innovation projects. Therefore, it is reasonable to believe that encouragement of external collaboration is **very important** to find new sources of knowledge, regardless if it is used as a complement or required for innovation.

According to Li (1995), it is of great importance to create a shared vision and trust to facilitate knowledge transfer in external collaboration relationships. To achieve this, qualitative communication is of the essence (Mohr and Spekman, 1994). This implies that there is a need to **facilitate external collaboration through communication**. SCA highlights the importance of feedback, and all ideas on the open innovation portal will be commented on within reasonable time. Further, SCA expresses that the quality of received solutions, when intermediaries are used, strongly depend on the quality of the problem formulation communicated. Therefore it appears to be very important to communicate the focal issue in an appropriate way, to receive innovative solutions within the area of interest. Additionally, when initiating an external collaboration, communication between the parties is important to e.g. clarify both parties' expectations of the project. This is further supported by MSF Sweden Innovation Unit, which stresses the importance of discussing what is expected of each party early on when initiating new collaborations. In line with the above, it is reasonable to believe that communication is **very important** to facilitate external collaboration.

Dahlander and Gann (2010) highlight some disadvantages with open innovation such as costs of; coordination, maintaining relationships, and protecting the ideas. This implies that there is a need to **manage costs of external collaboration and communication**. However, this was **not addressed** during the interview with SCA and was only briefly touched upon in the interview with MSF Sweden Innovation Unit. They mentioned that, due to limited resources, there is a need to prioritize when networking. However, too little information about the importance managing this area was gathered, and no certain conclusions can be drawn.

Added Management Areas

Both organisations have expressed a need to **manage the ownership of the idea**, which has not been identified in the studied literature. This implies that a new management area might be needed. When working with external collaboration, SCA expresses that clarifying the ownership early in the process decreases the risk of conflicts later on. MSF Sweden Innovation Unit, on the other hand, expresses that the ownership should not be discussed early on in the process, due to the decreased probability of a fruitful collaboration. However, they also point out the high probability of people disagreeing later on, if the innovation becomes a commercial success and the ownership of the idea is not clarified. The differences between the two might be due to their respectively dependence on external partners. SCA

uses external collaboration as a complement to internal innovation, while MSF Sweden Innovation Unit is completely dependent on partnerships. Finally, in the internal collaboration case, the ownership of the idea is also clarified through signing the original idea with the name of the inventor. This enables the company to give credit to those with successful ideas and, as expressed by SCA, this has increased the willingness to share ideas. Hence, it can be argued that managing the ownership of the idea is **important** to address. However, how to manage this area in external collaboration, depend on how reliant the organisation is on partnerships.

Interaction

In the case interview focusing on internal Collaboration and Communication, SCA expresses that the initiative has increased the transparency of ideas and contributed to creating an open climate. In addition, they have received positive response from engaging the employees in idea generating activities, hence improved the **Innovation Culture**. In the case interviews focusing on external Collaboration and Communication, both organisations expressed a need for **IP and Knowledge Management** due to the issue of ownership, as well as the nature of collaboration implying knowledge exchange.

IP and Knowledge Management

How to optimally **appropriate the returns from investments** is considered important in the literature. It can be argued that in order to capture value from an innovation, there is a need to exclude others from imitating the innovation (Pisano and Teece, 2007). This can, for goods and services, be managed through IPR. Knowledge on the other hand is easier to copy and therefore the risk of not being able to appropriate the returns from such investments increases (Kim and Mauborgne, 1999). Further, IPR can be used to strengthen the company's reputation, position in negotiations, and serve as a measurement index (Blind et al, 2006). NCC Roads has many patents, however, in order to appropriate returns these have shown to be of little importance. Instead, NCC Roads initiative with centralizing the IPR costs enabled a unified branding strategy. By using consistent brands and collective product and service assortments, NCC Roads has increased their competitive advantage due to fulfilling the customers' need for integrated solutions. Finally, in line with the above, it appears as IPR have improved NCC Roads reputation and hence the chances to appropriate the returns from innovation investments. However, NCC Roads is operating in an industry were patents is easily overlooked and does not bring a good protection. Therefore it is reasonable to believe that patents can be as important as brands in a different industry. Although possible differences between organisations and industries, it appears as the usage of IPR is **very important** in order to appropriate the returns from innovation investments.

To **assure freedom-to-operate** is important to secure a company's access to technological knowledge (see e.g. Peters et al, 2013). This can be done by e.g. protecting the innovations with IPR, and thereby exclude others from using it. Moreover, strategic disclosure can be used in order to create freedom-to-operate, since it hinders competitors from being granted patent protection (Peters et al, 2013). However, NCC Roads believes that ensuring freedom-to-operate with patents is not important, due to the fact that their products are hard to protect and the risk of invent-around is high. On the other hand, NCC Roads emphasises the importance of protecting brand names to increase the competitive advantage. Hence, assuring freedom-to-operate by IPR is considered **important**. However, it is reasonable to believe that the IPR used is industry specific, and that patenting might be of great importance in other industries in order to assure freedom-to-operate.

In the literature it is argued that knowledge sharing cannot be forced, instead, it tends to happen only when individuals cooperate voluntarily (Kim and Mauborgne, 1999). Hence there is a need to **create incentives for knowledge sharing.** One way of creating such incentives can be the use of e.g. patenting. Before the initiative, NCC Roads experienced low willingness among the local offices to share new knowledge. By centralizing all costs related to IPR and innovation projects, NCC Roads noticed that the incentives to share knowledge between the local actors increased. This has resulted in more innovations being beneficial to the entire organisation. Hence, it is reasonable to believe that creating incentives for knowledge sharing is **very important** to increase the organisational innovation capability and leverage new innovations.

Interaction

NCC Roads has, by centralizing the costs of IPR, increased the transparency and knowledge transfer between the local actors. This has enabled the company to jointly address goals and target innovation activities in line with an overall **Innovation Strategy.** Further, the centralization has together with the consistent brand strategy improved the transparency of the products throughout the company and improved NCC Roads' reputation. This has contributed to making the employees proud and affected the **Innovation Culture** positively.

Resource Management

As argued in the literature, there is a need to **manage human competences** since an organisation is a complex human system (Strata, 1989). Ideas are developed, carried, reacted to, and modified by people (Van de Ven, 1986). Therefore, when initiating a new innovation project, people with various backgrounds should be allocated (Furr and Dyer, 2014), in order to widen the perspective of the project group. Axis has chosen to allocate human resources solely to innovation work of a more radical nature, a new innovation unit. The unit is composed of engineers with exceptional skills and entrepreneurial influences, both generalists and specialists, from cross-functional departments. Further, Axis expresses that an increased number of radical ideas is generated through this kind of setting, which confirms that there is a need for allocating people with various backgrounds in order to generate and manage break-through ideas. Sandvik Coromant has developed a network of idea ambassadors that are educated in idea management. Through this network the competences can be developed and spread throughout the global organisation. In order to reach the entire company, the idea ambassadors are from various backgrounds and located at different sites. In line with the above, Sandvik Coromant's initiative of increasing the competences within a specific group distributed in the company, is a clear initiative to manage human competences. The difference between the two initiatives might be explained by the different objectives. Axis clearly wanted to increase the number of radical ideas that do not fit in the original product development process, while Sandvik Coromant wanted to increase the level of radicality of the ideas but focused on innovation that could be developed in the original development process. However, it appears to be **very important** to both companies to manage human competences to increase the organisational innovation capability.

To allocate and **create time for innovation** is in literature highlighted as important in order to achieve success in innovation work. However, it is not a particular amount of time that is needed, instead uninterrupted time for innovation is requested. This because associational thinking that leads to new insight, and hence innovations, are more likely to happen when the mind is absorbed with a particular challenge. (Furr and Dyer, 2014). Both Axis and Sandvik Coromant has allocated time for innovation. Axis has chosen to assign an innovation unit working solely with radical innovation. Sandvik Coromant has chosen to assign three innovation coaches working to facilitate innovation together with part-time idea ambassadors spread throughout the organisation, in order to increase the

global organisational innovation capability. This implies that it is **very important** to allocate time, however, the approach differs and so does the results. Following the above, the creation of an innovation unit is advantageous aiming for radical innovations since the innovation work is guided by new opportunities, rather than operating the daily business. A network of idea ambassadors, on the hand, is preferred if the goal is to increase organisational involvement in innovation activities.

Managing reallocation of resources between projects is important to the organisation's capability of evaluating, redirecting, and cancelling projects (Furr and Dyer, 2014). Axis expressed that a proven concept has three alternative paths; accept and transfer to product development, further test and develop, and reject or put on hold. The chosen path depends on market potential and resources. This implies that Axis addresses the need for evaluating, redirecting, and cancelling projects. On the other hand, Sandvik Coromant did not address this question during the interview. This might be due to the fact that Sandvik Coromant's initiative is spread throughout the organisation, implying a decentralized ownership of these tasks, while Axis has created a centralized innovation unit managing their own resources. Axis expressed a need to manage reallocation of resources between projects. Therefore it is reasonable to believe that this area should not be neglected, and should be considered **important**.

Added Management Areas

Although not expressed in the literature, a need to **manage responsibilities** was detected in both cases. Axis expressed that project managers who wants to develop innovation projects are difficult to find, since this is not their responsibility and hence might not be in their interests. To address this problem they have allocated a project manager of new opportunities, responsible to develop the innovation projects that does not fit into the existing product lines. Sandvik Coromant, on the other hand, has distributed the responsibility for innovation throughout the company, with the innovation coaches as a central role. However, it is clearly stated that the responsibility for idea management lies with line managers since they possess the resources to further develop the ideas. This implies that it is **important** to address who is responsible for what in the innovation process, e.g. the mentioned examples of who is responsible to manage ideas and who is responsible to develop the ideas.

Interaction

Axis expressed a need for patience, trust, and legitimacy when implementing the innovation unit. Trust and patience needs to be provided by top management through their support of the innovation unit, however, legitimacy must be earned in the rest of the organisation. This can be done by recruiting top engineers to the unit and by exchanging services with other departments. However, all three above-mentioned aspects imply a need for an **Innovation Culture**. Sandvik Coromant also experiences a connection between their initiative and Innovation Culture. However, they expressed that their initiative has had a positive effect on the Innovation Culture, by increasing the awareness and enthusiasm of innovation activities throughout the company. The difference between the two companies can once again depend on the degree of centralization of the initiatives. While a centralized initiative needs an innovation culture to work, a decentralized initiative rather increases the innovation culture throughout the company. This might be connected to the number of people who has the possibility to participate and contribute to the initiative. However, Axis way of inviting other employees to work with their ideas at the innovation unit, reaches more people and consequently has a positive effect on the innovation culture as well.

Sandvik Coromant expresses that the initiative has improved the Front-end Innovation Process since it both has provided an alternative way to pitch new ideas, and has made the employees aware of where

to turn with new ideas. Axis on the other hand is dependent on a clear Front-end Innovation Process internally, in the innovation unit, to generate innovations of value. Hence, resource allocation can either depend on or influence the **Front-end Innovation Process.** Further, Axis is dependent on the **Back-end Innovation Process**, to develop and commercialise the new concepts outside the innovation unit. Finally, both companies have expressed a need for **Collaboration and Communication**. Axis is mainly dependent on collaboration with the product development department since they are the ones developing the provided concepts. Sandvik Coromant's global initiative emphasises the need for collaboration and communication between the idea ambassadors, and the aim is to create a cross-departmental collaborating network to facilitate innovation.

5.4. Process Factors

Below the, from literature, identified key management areas of the Front-end and Back-end Innovation Process is discussed in comparison with the cases in the focal factors.

Front-end Innovation Process

The front-end innovation process begins with the task to **create ideas**. However, as is emphasised in literature (see e.g. Garud et al, 2013), there are two ways of developing new ideas; demand pull or technology push. In the case of Alfa Laval, the ideation phase is characterised by both demand pull and technology push. This because the innovation team aims to address new business opportunities given by the environment, as well as to exploit new to the world technologies. Volvo Group has developed an ideation phase characterised by internal demand pull. However, this implies that the ideation phase can address either external opportunities or technology development, depending on the questioner's intention. Hence, it is **very important** to Alfa Laval and Volvo Group to support both a demand pull and technology push driven ideation phase. However, the practices used at the companies are considerably different. At Alfa Laval there is a special department aiming for more radical innovations, supported with ideas from employees at other departments as well as external partners. Volvo Group rather support the core processes with tools and methodologies to help employees to generate new ideas within a certain area. Although these differences in practice, both companies support the by literature expressed necessity of a well-developed ideation phase.

Hansen and Birkinshaw (2007) argue that innovative ideas will not prosper if the organisation does not possess strong screening and funding mechanisms. Hence it appears to be important to **manage ideas and select projects** in order to assess what ideas are worth pursuing (Tidd, 2005). At Alfa Laval the innovation team is responsible for managing and evaluating all ideas of a more radical nature. This implies a clear ownership of these tasks, which in effect has clarified where employees with new ideas should turn. However, Alfa Laval expressed that the evaluation of new ideas, especially of a more radical nature, is very difficult due to the uncertainties implied by unexplored ideas. To address this issue the senior members of the innovation team evaluates the new ideas, based on experience and gut feeling, from an attractiveness, uncertainty, and time to launch perspective. Volvo Group's approach to evaluate new ideas is similar where the questioner, the person asking for new ideas within a certain target area, either evaluates the ideas himself or assign a group of experts within the field to this task. Hence, it appears as the management and evaluation of ideas are **very important** at both companies due to the resources spent on this task. However, neither Volvo Group nor Alfa Laval has developed a strict objective way of assessing the ideas' potential. Although, they address the issue of subjectively assessments by having a larger group of people evaluating the ideas.

The task to **create development projects** of new ideas is in the literature considered to be essential in order to leverage from the generated ideas. Among others, Tidd (2005) argues that there is a need to

develop a clear strategy for how to realise new ideas, and allocate resources to this work. In line with this, both companies have developed clear strategies for realising new ideas, although their practices to a great extent differ. At Alfa Laval, the innovation team has the ownership of the greater part of the development phase. Further, an idea is refined until a proof of concept is achieved, before initiating a development project. Volvo Group has solved the problem of ownership of development projects by implementing the internal demand pull system, with a predetermined receiver. This implies that the generated ideas enter development departments with a clear focus on commercialisation in the near future. Hence, both companies have a clear strategy of how to create new development projects and this is therefore considered **very important** to address. However, the two described practices imply a different level of radicality to the created development projects. Volvo Group, uses a demand pull system with a clear focus on commercialisation, which might lead to an increased risk of only developing non-radical innovations. This in contrast to Alfa Laval, which iterates and refines ideas until proof of concept is achieved, enabling more radical innovation projects. However, Volvo Group has defined different paths for new ideas depending on the business potential, radicality, and viability in order to address the above mentioned issue of only developing incremental innovations. Hence, the properties of the chosen practice needs to be considered when addressing the management area of creating new development projects.

Furr and Dyer (2014) express the need to continuously **evaluate innovation development projects** in order to avoid unsuccessful innovation projects. This implies a possibility to redirect the innovation efforts or even cancel innovation projects showing unlucrative market potential, during the development phase. However, as argued by Keegan and Turner (2002), by evaluating innovation projects in a too early phase, there is a risk of cancelling projects that do not show quick positive results. Hence the evaluation of innovation projects appears to be a perplexing management area that needs to be addressed in an adequate way, to not impact the organisational innovation capability negatively. During the interviews neither Alfa Laval nor Volvo Group explicitly addressed this management area. However, it is reasonable to believe that Alfa Laval has addressed this issue, wilfully or not, by implementing the new front-end innovation process. This due to the focus on timing and exploration of new opportunities, where development projects are iterated until proof of concept is achieved. This implies that the development projects are evaluated continuously from a business potential perspective. However, no general conclusion can be drawn due the fact that the focal management area was **not addressed** during the interviews.

Additional Management Area
Although, to some extent addressed in managing ideas and selecting projects, a need for an additional management area was detected during the interviews; **give feedback on ideas**. This is highlighted due to the importance of keeping enthusiasm among the employees, and to encourage them to come up with new ideas. Alfa Laval expressed that giving feedback to the inventor is essential to keep an innovation friendly culture in the company. Volvo Group, on the other hand, does not explicitly express a need for feedback. However, they did mention the need for facilitators giving constructive comments on the ideas, which implies a type of feedback. Hence, the new management area is added as **important** when addressing the Front-end Innovation Process.

Interaction
During the interviews, both Alfa Laval and Volvo Group expressed a need for a supportive and open working environment, to facilitate for collaboration in order to generate high-quality ideas. This implies that there is a close connection between **Innovation Culture** and **Communication and Collaboration** to achieve success in, especially, the ideation phase of the Front-end Innovation

Process. Further, as explicitly expressed by Volvo Group, the development of new ideas is strongly dependent on the resources obtained. Hence, it is reasonable to believe that the Front-end Innovation Process is dependent upon **Resource Management**. Lastly, Alfa Laval and Volvo Group does not separate the Front-end and **Back-end Innovation Process**, implying a close dependence and influence between the two factors.

Back-end Innovation Process

As the Back-end Innovation Process focuses on the commercialisation of the innovation, it is important to assure to **capture value by matching the innovation with a business model**. Literature argues that the commercialisation of the innovation is decisive, to how well the organisation will be able to capitalise from the innovation. Hence the role of the business model is very important to the success of the innovation. (Chesbrough and Rosenbloom, 2002). The Absolut Company's new business unit, addressing the question of matching innovation to a business model, ensures that new innovations are assessed by their potential and not by how well they fit in existing business models. This implies that The Absolut Company improved the chances for commercialisation of new, radical innovations since these rarely fit into existing business models. Hence, it can be argued that matching the innovation with a business model is a **very important** management area at The Absolut Company, in order to achieve innovation success.

In line with Rogers (1983) reasoning, the rate of adoption is decisive to how much value the organisation will be able to capture from new innovations. He argues five factors to be crucial to the rate of adoption; the relative advantage, compatibility, complexity, trialability, and observability. Hence, this implies a need for these factors to be managed in order to appropriate the returns from innovation, or in other words, to **validate the business model**. The Absolut Company has implemented an agile approach, focusing on experimentation through the entire innovation process. Hence, they have managed to earlier on assess the market potential and probability of a high adoption rate. Further, they have the possibility to readjust the innovation and business model, in an earlier phase of the innovation process, and hence to a lower cost. By testing the innovation on customers in a limited market, The Absolut Company can simultaneously validate its business model and develop the innovation. Hence, when the innovation is developed and ready for full-scale commercialisation, the possibility of the innovation becoming a commercial success has increased. This implies that validation of the business model is **very important** to address in the Back-end Innovation Process.

Added Management Areas

Although not being explicitly addressed in studied literature, The Absolut Company argues that the **speed to market** is of the essence to achieve commercial success from innovation. This due to greater possibilities of gaining first mover advantage to unexplored markets. In line with this, it is reasonable to believe that speed to market is a **very important** management area, in need to be addressed when developing a Back-end Innovation Process. The Absolut Company has addressed this issue by e.g. focusing their innovation process on clear deliverables, implying increased motivation for employees to finish tasks and hence pushing the project forward.

Interaction

In line with the reasoning above, the commercialisation of the innovation is strongly dependent on **Organisational Context Management**. As shown by The Absolut Company, testing the innovation on customers in the market early on in the innovation process increases the quality of the information received from the organisational context and better decisions can be made. Further, earlier understanding of the innovation's market potential eases the **Management of Resources**. This due to

the possibility to reject ideas or if an idea is approved by the customers, give more resources to accelerate the development of the focal project. Hence, the Resource Management is guided by the value proposed to customers. Further, The Absolut Company has by implementing the agile approach made the Front-end and Back-end Innovation Process overlapping activities. Hence, the Back-end Innovation Process is clearly dependent on as well as influences the **Front-end Innovation Process**. Further, The Absolut Company explicitly expressed that **Communication and Collaboration** facilitates the agile approach. The agile approach has also created a more supportive and enthusiastic **Innovation Culture**.

5.5. Generalizability of the results

The study is focused on Swedish organisations operating on a national or international market, all can be considered as large organisations. However, the organisations chosen are of diverse nature when it comes to industry. This implies that the organisations possess different internal capabilities as well as have different opportunities and limitations regarding innovation work. We identified these differences to be interesting from a capability perspective, and hence provide a favourable sample when exploring good practices within the different key factors. However, this limits our ability to draw general conclusions due to the difficulties implied by comparing organisations across industries.

In this study, a large amount of data has been collected. However, most data is connected to the different key factors implying that the data is distributed within the entire Innovation Management System. This has limited our ability to generalize the results about the management areas and interactions due to a smaller amount of data collected, one or two cases per key factor. Nevertheless, distributing the data collection on the different key factors was necessary to examine the need for Innovation Management Systems. Further, the distributed data collection implies that consistent questions about the different management areas could not be asked. This because the management areas are specific to the factors, and hence only associated management areas were relevant to discuss during the interviews. The lack of consistent questions resulted in a limited ability to draw any generalizable conclusions about the different management areas. The two above-mentioned difficulties implies a need for a larger sample within all different key factors, in order to increase the generalizability and maintain the holistic approach to innovation management.

6. Conclusion

The objective of this thesis is to use the good practices to analyse the key management, areas as well as identify interactions between the different factors. Below, a summary of the key management areas and their importance to practice will be presented, see table 2. Hence, answering research question 4: How important are the identified management areas in practice and can any additional management areas be detected?. Following, a table of identified interactions between key factors in the Innovation Management System, table 3, are presented. Hence, answering research question 5: Are there any interactions between the key factors implying synergies that affect the organisational innovation capability?. Finally, the theoretical and practical implications will be discussed.

6.1. The Importance of Key Management Areas

Table 2 has been compiled in order to answer research question 4: *How important are the identified management areas in practice and can any additional management areas be detected?*. In the table, the original summary from 2.6. is developed by adding the associated importance indexes argued for in the discussion chapter. As mentioned in the method chapter, 3.1., the importance indexes were assessed based on the focus given to the different management areas during the interviews. Further, the importance index suggests how important the management area is to a successful implementation of the studied initiatives, addressing the different key factors.

The scale used is: *Not important*, *Important*, *Very important*, and *Not addressed*. If any additional management areas of importance could be detected in the practices, these are added to the list and marked with a plus. Further, as before mentioned no applicable case could be detected in the Innovation Performance Measurement and Management factor. Hence, the management areas within this factor are marked as not addressed. Although these importance indexes have not been proven to be generalizable, we argue that they provide an indication to what management areas that most urgently needs to be handled when addressing specific key factors of the Innovation Management System.

Table 2: *Key management assessed by importance to practice. The scale used is: Not important, Important, Very important, and Not addressed.*

Key factor	Key management areas	Importance index
Organisational Context Management	1. Acquire customer insight 2. Obtain deeper customer understanding 3. Manage political, technical, economical, and social aspects 4. Adapt to new information	1. Important 2. Very important 3. Very important 4. Important
Innovation Strategy	1. Steer towards value focused innovation 2. Create a focus on internal capabilities 3. Link innovation strategy to business strategy	1. Important 2. Very important 3. Very important
Innovation Culture	1. Create organisation-wide values, norms, and practices that supports innovation 2. Trigger individuals to innovate 3. Create a commitment to innovation from top management 4. Create incentives for employees to innovate + **Support innovation enthusiasts**	1. Very important 2. Very important 3. Very important 4. Important + **Very important**
Innovation Performance Measurement and Management	1. Measure innovation 2. Use measurements to increase the organisational innovation capability	1. Not addressed 2. Not addressed
Collaboration and Communication	1. Encourage collaboration between individuals 2. Facilitate collaboration through communication 3. Manage costs of collaboration and communication + **Manage the ownership of the idea**	1. Very important 2. Very important 3. Not addressed + **Important**
IP and Knowledge Management	1. Appropriate returns from investments 2. Assure freedom-to-operate 3. Create incentives for knowledge sharing	1. Very important 2. Important 3. Very important
Resource Management	1. Manage human competences 2. Create time for innovation 3. Manage reallocation of resources between projects + **Manage responsibilities**	1. Very important 2. Very important 3. Important + **Important**
Front-end Innovation Process	1. Create ideas 2. Manage ideas and select projects 3. Create development projects 4. Evaluate innovation development projects + **Give feedback on ideas**	1. Very important 2. Very important 3. Very important 4. Not addressed + **Important**
Back-end Innovation Process	1. Capture value through matching innovation to business model 2. Validate business model + **Speed to market**	1. Very important 2. Very important + **Very important**

6.2. Interactions Between Key Factors

The idea of the Innovation Management System is that all the factors, that constitute the system, are important to address to increase the organisational innovation capability. However, many of the factors are impossible to address solely, due to interdependencies among them. These interactions between the key factors are also a testament to the need for Innovation Management Systems, since they highlight the importance of addressing more than one factor when striving to increase the organisational innovation capability.

From the case studies, it can be concluded that the factors can both depend on and affect other factors. Table 3 below was compiled as a summary of the interactions detected in the case studies, previously addressed in the discussion chapter. The interactions were identified by analysing the answers to the questions about; important aspects to successful implementation of the initiative, as well as what positive effects the initiative has brought to the innovation work at the organisation.

The table should be interpreted as followed, the row either depends on "X" or positively influences "O" the factors specified in the columns. Hence, the table answers research question 5: *Are there any interactions between the key factors implying synergy effects to the organisational innovation capability?*.

However, some of the interactions appear to be especially interesting, due to the stronger connection between them. As shown in the table below, Organisational Context Management positively influences the Innovation Culture and the Innovation Culture appears to depend on the Organisational Context Management. Hence, both case studies have expressed the corresponding need for the other factor, implying a stronger relationship between the two. The same applies for the relationships highlighted in the table below.

Interactions between key factors									
	Organisational Context Management	Innovation Strategy	Innovation Culture	Innovation Performance Measurement and Management	Collaboration and Communication	IP and Knowledge Mangement	Resource Management	Front-end Innovation Process	Back-end Innovation Process
Organisational Context Management		XO	**O**		X	X			
Innovation Strategy			O	O			O		
Innovation Culture	**X**				**X**		**X**		
Innovation Performance Measurement and Management	-	-	-	-	-	-	-	-	-
Collaboration and Communication			**O**			X			
IP and Knowledge Mangement		O	O						
Resource Management			**XO**		X			**XO**	**X**
Front-end Innovation Process			X		X		**X**		**XO**
Back-end Innovation Process	X		O		X		O	XO	

Table 3: *Interactions between key factors; the row depends on (X) or positively influences (O) the column. Highlighted relationship means that a corresponding need for the other factor was detected, implying a stronger interaction.*

As shown in the table above, two factors appear to be connected to most of the other factors in the system, namely; Innovation Culture as well as Collaboration and Communication. The Innovation Culture is positively influenced by most of the other factors, but only influences the Resource Management. This implies that initiatives within any other factor leads to an increased engagement to innovation activities, and hence improves the Innovation Culture. On the other hand, Collaboration and Communication appears to influence most other factors in the system. Hence, by improving Collaboration and Communication most other factors will be positively affected.

6.3. Theoretical Implications

This study has, firstly, designed the Innovation Management System by identifying nine key factors proclaimed by previous research to be vital to the organisational innovation capability. However, only eight of these factors could be assessed and proved to be important in practice. This opens up for discussion of whether the Innovation Performance Measurement and Management factor is essential to the organisational innovation capability or not.

Important management areas within all key factors were identified from previous research to examine how each key factor is managed in practice. As shown in table 2, all management areas were assessed from an importance to practice perspective. This gives an indication to which management areas that need to be addressed in an organisation's strive to become more innovative. Further, additional management areas important to practice were detected, which have not been acknowledged or given the focus implied by practice in previous studies.

Interactions between the different key factors were identified when studying the chosen organisations. This implies that organisational innovation capability is a complex matter dependent on more than one factor. Hence, this is a testament to the need for a more holistic approach to innovation management practices, proving the need for Innovation Management Systems when addressing organisational innovation capability.

6.4. Practical Implications

The compilation of important management areas in table 2, can by innovation managers be used as guidelines to what needs to be addressed in order to improve the organisational innovation capability. Further, the by the case studies provided initiatives of how to address the specific management areas should work as inspiration to innovation managers, when addressing the different factors of the Innovation Management System. However, the initiatives should be considered as good practice in contrast to best practice.

This study has clarified that interactions between different key factors exist. Hence the need for a more holistic approach when addressing the organisational innovation capability, Innovation Management System, has been proven. This clarification contributes to managerial implications, since changes in any of the key factors impact the organisational innovation capability. However, this also implies that the organisational innovation capability might not be maximal if any of the key factors is neglected, and hence further highlights the need for innovation managers to have a holistic approach to their work.

7. Further Research

This study has identified nine key factors of the Innovation Management System of which eight have been proven to affect the organisational innovation capability in practice. This implies a need for further research into the not proven factor of Innovation Performance Measurement and Management to determine if this factor is vital to the organisational innovation capability or not, and hence if it should be part of the Innovation Management System. Moreover, it would be interesting to further investigate if there are any additional factors not addressed in this study, impacting the organisational innovation capability and which therefore needs to be addressed when designing the Innovation Management system.

As mentioned above, several management areas within each key factor have been identified from previous studies and the explored practices. By assessing the management areas by importance to practice, indications to which management areas are most essential have been provided. However, the number of cases limits our ability to draw any general conclusions to organisations in different industries, and maybe even to organisations in the same industry as the explored case organisations. Hence there is a need for future studies to explore the cross-industry importance to the identified management areas, to provide a more adequate practical tool for organisations to become increasingly innovative.

This thesis has identified potential interactions between the different factors in the Innovation Management System. However, due to the limited amount of data, the interactions cannot be acknowledged as generalizable. Hence, one potential future research area is to investigate whether or not these interactions can be confirmed and generalised to cross-industry organisations. Further, future research should also explore how these interactions affect the different factors and what synergies that can be expected. This would be of great practical use to organisations trying to increase their innovation capability.

Due to the diverse nature and the personal beliefs of innovation enthusiasts, leading many of the studied initiatives, the organisations had focused and developed expertise within different factors of the Innovation Management System. In line with this, we argue that the diverse sample was a necessity to explore good practices within each key factor. Hence, the need for a diverse sample should be considered in further research about the Innovation Management System.

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9. Appendix

Appendix 1 – Interviewees in the case study

Below the respondents in the in-depth interviews are numbered. Further, the respondents' role is presented together with the length of the interview.

Respondent	Respondent's role	Length
1	Global Innovation Business Development Manager	1h 10m
2	Engineering Director Head of Transmission Development	1h
3	Senior Manager Head of Fluid and Emission Treatment	45m
4	Strategic Research and Innovation Manager	1h 24m
5	Product Management Office Manager	1h 15m
6	Innovation Study Leader	1h 29m
7	Director of Customer Satisfaction	1h 9m
8	Innovation Manager, Collaboration	56m
9	Open Innovation Programme Manager	56m
10	Innovation Officer	1h 22m
11	Innovation Practices Advisor & Case Manager	1h 1m
12	SVP Marketing, Business Development	1h 13m
13	Communications Manager	30m
14	Innovation Manager - Product Concept and New Ideas	1h 55m
15	Communication Officer and Innovation Leader	59m
16	Product Development and Innovation Leader	1h 13m
17	Concept Managers and Innovation Management Processes	42m
18	Concept Project Manager	54m
19	Vice President Technology Strategy and Innovation	50m
20	Global Innovation Manager	1h 16m
21	Global Vice President	1h 15m
22	Director Digital and Marketing Analytics	50m