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# **A comparative study on large firms' efforts to manage and stimulate innovation**

Applying an innovation capability framework for investigating idea implementation

*Master of Science Thesis*

*in the Management and Economics of Innovation Program*

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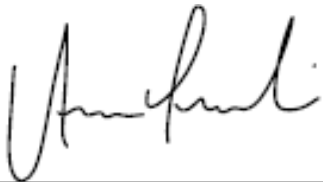
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Pleasant reading.

Gothenburg, March 2016.



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Amra Subasic



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Gouthanan Pushpanathan



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## Abstract

As markets become fiercely competitive, innovation has proven to be quintessential for the long-term survival of a firm. In recent times however, and contrary to Schumpeterian hypothesis, it is evident that many large firms struggle with the execution of their innovative vision. There appears to be a need for improving the understanding of the inhibitors and enablers of ideas that are different to making it into further development within large firms. Consequently, the purpose of this thesis is to perform a cross-organizational and cross-industrial comparative study on large firms' efforts to manage and stimulate innovation. The participant firms are Ericsson (more specifically Ericsson's product development unit Packet Core), Volvo Cars and Hilti.

The study assesses and compares three firms' efforts to manage and stimulate idea implementation as a part of the innovation process, mainly through a deductive research approach, as the focus is to empirically collect data related to idea implementation and combine it with existing theory on innovation capabilities. This is mainly conducted through an assessment and adoption of various innovation capabilities frameworks to idea implementation, combined with the application of the concept System Dynamics for investigation of the dynamics behind firms' practices for idea implementation.

The study identified discrepancies in perceptions on innovation, both within the treatment of the phrase in research on innovation capabilities, as well as in the management between organizational levels within large firms, especially between middle management and lower, operational, hierarchies. We suggest that research on innovation management needs to continue emphasizing exploration of separate phases of the innovation process, rather than treating innovation as a spectrum encompassing all process steps and outcomes. This is in particular necessary for the phase following ideation, in this study referred to as idea implementation. Such research needs to explore the dynamics within and between the stages in order to provide more comprehensive and manageable concepts. Finally, the study shows that the burden of navigating within the vast field of innovation should not be put on the single middle manager, and points at the importance of aligning the firms' vision and strategy throughout the organizational levels.

# 1. Introduction

*Innovation in firms has been of continued interest to scholars and researchers such as Tellis et al. (2009), Rogers (2003), Van de Ven (1986), Kanter (1983) and Schumpeter (1942). It is therefore intriguing that a few studies have been made of how firms convert, or implement, creative ideas into actual innovations (Baer, 2012; Alam; 2006, Oldham & Cummings, 1996). This chapter will present the background and outlines to a study within a master thesis attempting to bring clarity to the topic.*

## 1.1 Background

The economic progress prior to World War II was fixated on the neoclassical economic theory of equilibrium condition (Nelson & Winter, 2002). It was based on the notion that free market or perfect competition results in efficient resource allocation, which regulates economic activities and establishes equilibrium through forces of supply and demand (Agboola, 2015). However, in the early post war era, the focus began to shift due to the growing awareness that neoclassical theory cannot deal adequately with the disequilibrium dynamics involved with the processes of economic growth driven by technological change (Nelson & Winter, 2002).

The market in the 20th century is increasingly competitive where firms need to be innovative and responsive to new demands; they need to rapidly develop innovative solutions to remain in business (Börjesson & Elmquist, 2012). Already in 1942 Schumpeter emphasized the importance of innovation both for businesses and society as a whole (Schumpeter, 1942). Schumpeter simply identified innovation as the driver of entrepreneurial spirit, and the reason for economic growth and business activity (Bullinger, 2008).

As marketplaces become more dynamic, the interest in innovation and its management has increased (Baregheh et al., 2009; Kanter, 2006). Authors such as Börjesson and Elmquist (2012), Assink (2006), Knight and Cavusgil (2004), and Lawson and Samson (2001) have recognized the capability to innovate as being central to firms' competitiveness. Tushman and Nadler (1986) stressed that to be able to compete in ever-changing environments, companies must create new products, services and processes, but to dominate, they must adopt innovation as a way of corporate life. The same authors argued that organizations can gain competitive advantage only by managing effectively for today while simultaneously pushing towards innovation for tomorrow, suggesting that the sustained management of innovation is one of the most pressing problems for firms. But despite large investments in management time and funding, innovation is often described as a frustrating endeavor (Pisano, 2015). There are numerous examples of successful innovators who have had a hard time sustaining their innovative performance, whereof some well-known examples are Polaroid, Nokia, Yahoo and Hewlett-Packard.

Thus, managing the complex and risky process of innovation has been problematic and fraught with difficulty (Kanter, 1989; Quinn, 1985). Most of the difficulties stem from tension between firms' attempting to protect revenue streams from existing businesses critical for current success, and supporting new concepts that may be important for future success (Kanter, 2006). Some authors (e.g. Heidemann Lassen et al. (2009), Nonaka and Takeuchi (1996) and Kuratko et al. (1990)) have emphasized management's role for the firm's

innovative outcomes, often suggesting that middle managers who interact with lower and top-level managers, can in particular parcel and integrate knowledge to proactively pursue some form of newness. In fact, it is widely recognized that middle management should play an important role for the firm's innovative endeavors. However, research on the intra-firm conditions for fostering innovation at the middle management level appears to be limited.

Authors such as Börjesson and Elmquist (2012), Assink (2006), Knight and Cavusgil (2004) and Lawson and Samson (2001) have stressed the importance for a firm to assess capabilities to innovate in an ever-changing environment. Several authors have attempted to conceptualize innovation capabilities: Börjesson and Elmquist (2012), O'Connor (2008), Assink (2006), Kanter (2006) and Lawson and Samson (2001), to mention a few. Lawson and Samson (2001) described a firm's innovative capabilities as a group of elements such as functions, processes, values and other distinctions that are not mutually exclusive, and possible to describe theoretically but hard to control in practice. Börjesson and Elmquist (2012) simply described innovation capabilities as the organization's muscles withholding the preparedness to nurse competitiveness through innovation.

What unites these conceptualizations of innovation capabilities is that they stress the importance of treating the concept as an interdependent system that needs to be present for the firm to produce innovation as an outcome, i.e. commercialize the innovation, on a repeatable basis. At the same time, individual innovation refers to a process (Baer, 2012), by Van de Ven (1986, pp. 591) described as the "development and implementation of new ideas by people who over time engage with others within an institutional context". O'Connor (2008) is one of the few researchers who, in relation to innovation capabilities distinguished between different phases in the innovation process, in this case for producing radical innovations on a continual basis, constituting of Discovery, Incubation and Acceleration, and their interdependencies with their environment. Other researchers, for example Amabile (1996) and Oldham and Cummings (1996), distinguish two activities in the innovation process: creativity as the first stage and implementation of the idea as a second stage.

Over the last decade, work on creativity has flourished, reflecting the importance of the development of novel and useful, and either long term or short term, ideas for innovation (Baer, 2012). However, less effort has been put on exploring the latter phase of the innovation process (Baer, 2012; Alam, 2006; Oldham & Cummings, 1996), i.e. idea implementation. In 1963, Levitt (1963, pp.79) stated: "Ideas are useless unless used". Given the attention to innovation and firms' capabilities to innovate in research, it is therefore surprising that so little attempt have been made to break down the concept innovation capabilities to different phases of the innovation process, and specifically the phase of idea implementation.

In May 2015, the Packet Core product development unit at Ericsson, a large Swedish-based firm within the telecom industry, expressed an interest in exploring their improvement potential regarding idea implementation through a comparative study on large firms' efforts to manage and stimulate innovation. The result is this report, which aims to perform the task through adapting a conceptualization of innovation capabilities to idea implementation as a phase of the innovation process, and thereby fill a gap in literature on firms' efforts to manage and stimulate idea implementation. The report is the outcome of a master thesis at Chalmers University of Technology written by Amra Subasic and Gouthanan Pushpanathan, and undertaken during the autumn of 2015.

### 1.2 Problem statement

Even though it is clear that firms need to innovate (Axtell et al., 2000) in order to compete in a competitive and dynamic world (Björkdahl & Börjesson, 2012; O'Connor, 2008), little research has been made on idea implementation as a part of the innovation process (Bear, 2012). The gap is interesting to explore since several researchers, for example Florén and Frishammar (2012), and Levitt (1963), have claimed that organizations most often do not suffer from a lack of ideas, but face a challenge in making sure that the ideas move forward towards the creation of value. Further, it is the authors' perception that current research on innovation capabilities, i.e. firms' capabilities to produce innovations over time, makes little attempts to investigate the system dynamics behind such a system, especially within and between different phases in the process of transforming ideas into innovations. Thus, there is a need for filling a knowledge gap on the characteristics of innovation capabilities with regard to idea implementation as a part of the innovation process.

Finally, stakeholders at Ericsson's product development unit Packet Core desired such research to be performed on a middle management level - the level where Packet Core wished to push for changes within the organization.

### 1.3 Study purpose and research questions

With Ericsson as the host firm, the aim of the study is to perform a comparative study on large firms' efforts to manage and stimulate idea implementation as a part of the innovation process, in order to understand what hinders or enables creative ideas to make it into further development. To achieve this, a comparative study with three large participating firms has been performed: Ericsson, Volvo Cars and Hilti.

In order to fulfill the research purpose, the following research questions have been formulated:

*RQ1) What capabilities must large firms possess in order to be able to implement ideas in the innovation process?*

*RQ2) What do large firms do to ensure successful implementation of creative ideas?*

As the study aims to produce recommendations for Ericsson's Packet Core department, the host of the study, a third research question was formulated:

*RQ3) How can Ericsson's Packet Core learn from approaches towards idea implementation at other large firms?*

The study aims to provide value to Ericsson's Packet Core department, Volvo Cars and Hilti in the form of comparisons of the key findings from the exploration of idea implementation within the participating firms, focusing on their middle management levels. The results can also be of interest to other large Swedish firms that would be able to use the information to inspire and improve their innovation capabilities. It will include recommendations for Ericsson but, due to time constraints, will not provide recommendations to Volvo Cars and Hilti.

### 1.4 Delimitations

This study focuses on idea implementation as a part of the innovation process. Innovation implementation dealing with the commercialization aspects of innovation such as production, marketing, business development, etc. is however excluded. Further, the study will not include small firms, as the dynamics and inertias surrounding the small firms' middle management, if such a managerial level exists, is deemed to be too different from the corporate environment at the middle management level at a large firm.

The study also delimits from exploring personal traits and characteristics, such as personality types and managerial leadership styles, techniques and practices for fostering the firm's innovation capabilities. For example, managers' ability to motivate, inspire or lead his/her subordinates is not considered in detail. The reason for this is that the main aim of the comparisons is to support and inspire enhancements of large firms' innovation capabilities at large firms' middle management levels - a level which is considered to be partly disconnected from firms' regular operational work (see chapter 2.2.4 for more detailed descriptions of the relationship between firms' middle management levels and idea implementation).

### 1.5 Disposition

In table 1 the disposition of the continuance of this master thesis is outlined, along with content descriptions of each of the coming chapters.

**Table 1.** Disposition of the remaining part of this master thesis.

Chapter		Content
Literature review	2	Explanation of the term innovation, the meaning of innovation in large firms, innovation capabilities, and how these relate to idea implementation.
Methodology	3	Explanation of the study's methodologies for pursuing the research and answering the research question.
Within-case analyses	4	Summary of the case study findings from each of the participating firm.
Cross-case analysis	5	Comparison between the three cases.
Discussion	6	Mapping innovation capabilities with respect to idea implementation as a result from the cross-case analysis.
Recommendations	7	Researchers' reflections and thoughts on the study findings, with implications and recommendations for future research.
Conclusions	8	Conclusions to answer the research question.

## 2. Literature review

*The following chapter aims to provide a literary overview of the concept innovation capabilities with a special focus on idea implementation, as well as a conceptualization of this phase of the innovation process. A natural starting point is providing a clarification of the definition(s) and management of innovation. For example, can innovation be treated both as an outcome and as a process and how does the management of innovation at large firms differ from that of small firms?*

The need for understanding and managing innovation appears to be widespread in research (Van de Ven, 1986). In fact, innovation is one of the most widely researched phenomena in social sciences (Bullinger, 2008). There are numerous, and often ambiguous, definitions provided by researchers and practitioners on what the term ‘innovation’ means. These definitions often range from highly specific focus on technical innovation to broad generalizations, leading to imprecision in what is and is not innovation (Goswami & Mathew, 2005). Therefore a clear definition and understanding of ‘innovation’ is necessary for the purpose of this thesis.

### 2.1 Innovation background

The term innovation stems from Latin, where *novus* stands for ‘new’ and the corresponding verb *innovare* means ‘renew’ (Bullinger, 2008). Thus, it lies in the fundamental nature of the innovation that it is something new which contains a dimension of novelty (Baregheh et al., 2009; Bullinger, 2008; Rogers, 2003). However, various definitions within different disciplinary areas highlight different attributes in the definitions of innovation (Baregheh et al., 2009). For example, within the business and management sector, innovation is often characterized as something new that contains a certain degree of change, with the aim to generate value, superior performance, or some other type of advantage. Within technology/science/, the nature of innovation is more specifically focused on novel products, services or products, with success, often economic or differentiation, as the main aim.

The very meaning of the term innovation should not be confused with the terms such as idea, creativity and invention (Bullinger, 2008). An innovative *idea* marks the starting point of any innovative activity, and is defined as the conscious decision to deal with an object not yet known, the existence of some sort of interest or curiousness towards a topic, or the hope that in a certain, not finally defined area, innovations are still possible (Hauschildt & Salomo, 2007). *Creativity*, on the other hand, can be defined as the production of novel and useful ideas by an individual or a group of individuals working together (Amabile, 1988). According to Schumpeter (1934), an innovation is distinct from an *invention* (Ruttan, 1959). Fagerberg (2003) differed between the terms by explaining that an invention is the first occurrence of an idea for a new product or process whereas an innovation is the first commercialization of the idea. In general, there is a time lag between a successful invention and an innovation. While inventions may be carried out in different environments such as universities and research labs, innovations usually take place in commercial setups.

#### 2.1.1 Innovation - an outcome or a process?

Innovation can be defined as both an outcome and a process (Crossan & Apaydin, 2010). This duality is evident in Rogers’ (2003) definition: “An innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption” (Rogers, 2003, p. 12). Hughes (2011) identified innovation as a “multi stage process” which comprises the

transformation of ideas into new/improved products, services or processes. Baregheh et al. (2009, p. 1334) identified innovation as a multistage process, which comprises the transformation of ideas into new/improved products, services or processes. Thompson (1965, p. 2) stated that “Innovation is the generation, acceptance and implementation of new ideas, processes products or services”, whereas Knight (1967) treated innovation as a special case of the process of change in an organization, including the creation of an idea and its development, and the introduction and the adoption of the idea.

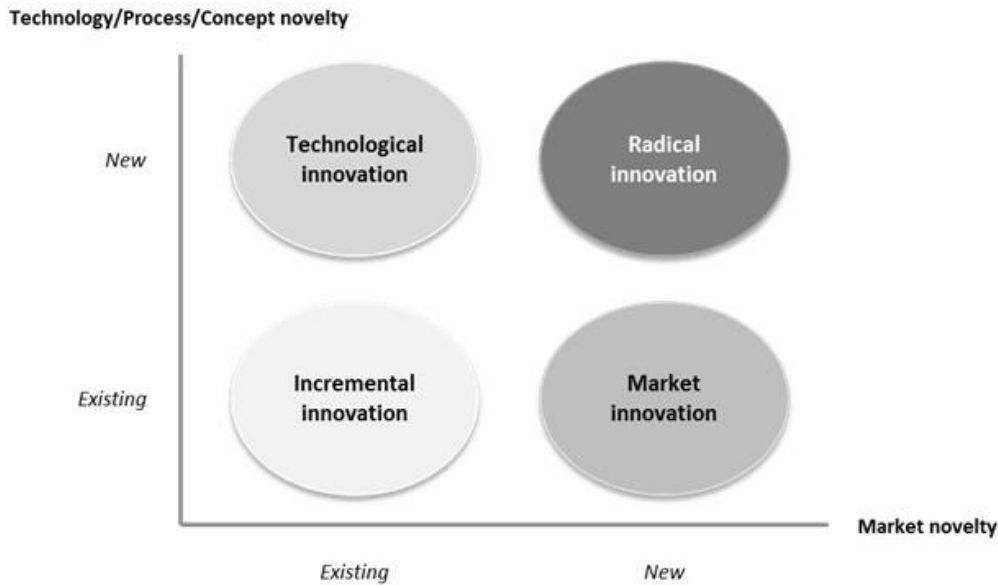
Innovation as an outcome was seen in Schumpeter’s (1934) treatment of the term. He considered innovation as the essential force of wealth creation and defined it to consist of five types: new methods of production, new sources of supply of raw material or semi-finished goods, new good or new quality of a good, opening a new market, and a new industry structure - such as the creation or destruction of a monopoly position (Harvey et al., 2010). The former two were classified under process innovation and the latter three under product innovation. Since 1934, when Schumpeter introduced the distinction between different types of innovation, various research studies have addressed different types of innovation, but without reaching a common classification scheme (Bullinger, 2008). Agreement is limited to the suggestion of a portfolio of innovation projects, which covers the spectrum from incremental improvements to more radical options across both, products and processes (Cooper et al., 2004; Eisenhardt & Brown, 1997; Tranfield et al., 2003).

### **2.1.2 Innovation and degree of novelty**

As mentioned, the essential characteristic of innovativeness is based on the novelty or the degree to which change is perceived (Bullinger, 2008). Damanpour (1991) argued that innovation is tightly coupled to change, as organizations use innovation as a tool in order to influence an environment or due to their changing (internal or external) environments. Innovation may involve different types of change depending on the organization’s resources, capabilities, strategies, and requirements (Rogers, 2004). However, novelty and innovativeness remain a question of individual perception and may consequently vary depending on the individual’s perspective (Bullinger, 2008; Hauschildt & Salomo, 2007; Lepak et al., 2007). Rogers (2003) for example argued that an innovation may have been invented a long time ago, but if individuals perceive it as new, it is an innovation for them.

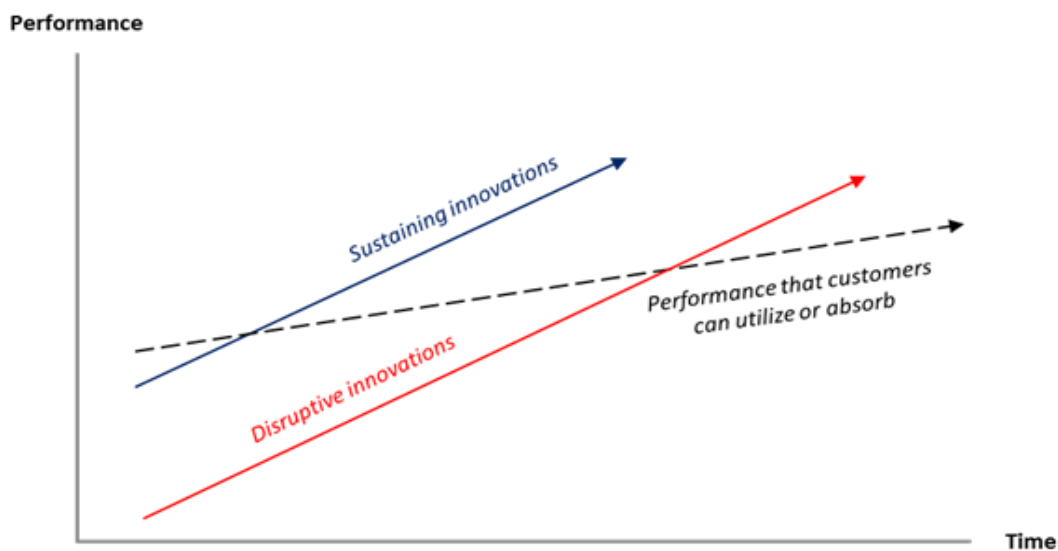
One approach to classify innovation based on Schumpeter’s work focuses on how radical the innovation is compared to the existing setup (Fagerberg, 2003). Continuous improvements based on existing setups are classified as ‘incremental’ or ‘marginal’ innovations whereas totally new developments are referred to as ‘radical innovations’. Figure 1 illustrates another, similar, approach where a spectrum of novelty or degree of innovativeness is categorized based on market and technological novelty. The figure is based on Bullinger’s (2008) multidimensional classification of innovation, drawn from Schlaak’s (1999) earlier work.





**Figure 1.** Degree of innovativeness based on market and technological novelty (Bullinger, 2008, p.19).

According to O'Connor (2008), radical innovations may disrupt existing industry dynamics and often lead to supranormal returns to firms engaged in it. Another approach for explaining industry disruption through innovation is provided by Christensen's (1997) theory of disruptive innovation, which shows how different trajectories of performance improvement eventually converts complicated, expensive products and processes into simpler, more affordable ones. Christensen argued that there are two different trajectories of performance improvement in every market, illustrated by the solid and dotted lines in figure 2.



**Figure 2.** Clayton Christensen's disruptive innovation (Christensen, 1997).

The solid lines represent the continual improvements of products or services that are carried out by firms over time (Hwang & Christensen, 2008). These improvements can include both incremental and more radical breakthroughs, but are called sustaining innovations as they sustain the existing trajectories of performance improvements, i.e. so that better products that can be sold to the best customers and for the best profits. The dotted lines reflect a trajectory of the customers' demand for and usage of ever-improving products and services. These lines begin with the least demanding tier of customers, but eventually intersect with the trajectory

of product improvements. The intersection illustrates the fact that when products begin to pack in more functionality than the customers need or desire, the disruptive type of innovation eventually emerges.

Christensen (1997) argued that because disruptive innovations do not appeal the customers that are paying the highest prices initially, they are almost always introduced by new entrants rather than the incumbents in the industry. Typically the gross margins for the emerging technologies are initially below the margins of the established ones, the end customers may differ, as well as the necessary distribution channels (Chesbrough, 2007). But before the disruptive innovation establishes a foothold in the market, it improves over time until the customers of the company find that their needs can be met (Christensen, 1997).

Although authors such as Yam et al. (2004) proved a close internal relationship between technological innovation capability and competitiveness, Chesbrough (2007) noted that due to rapid technological changes, great technologies cannot be relied upon to earn a satisfactory profit before they become commoditized. Instead, firms need to be able to innovate their business model. Later, Hwang and Christensen (2008), as well as Christensen and Raynor (2003) explained that the root of the tension in disruptive innovation is identified as being the conflict between the business model already established for the existing technology, and the one which may be required to exploit the emerging, disruptive technology.

A business model describes the rationale of how an organization creates, delivers, and captures value (Amit & Zott, 2012; Osterwalder & Pigneur, 2010). If a suitable business model is found, the technology may yield more value to the firm than it otherwise may have done and, similarly, if another firm uncovers a business model more suitable for the given technology, it may realize more value than the firm that originally discovered the technology (Chesbrough & Rosenbloom, 2002). A good example of this is the digital sales of music; the initial one time download based sales of audio via services such as iTunes were later trumped by subscription based business models pioneered by firms such as Spotify, Pandora etc.

### 2.1.3 What is innovation - a summary

It can be concluded that the definitions of innovation are many and ambiguous (Goswami & Mathew, 2005). Innovation can be treated both as an outcome and a process (Crossan & Apaydin, 2010). Authors such as Baregheh et al. (2009), Schumpeter (1934) and Thompson (1965) identified different types of innovation depending on the characteristics of the outcome, for example product innovation and process innovation, and authors such as Knight (1967) and Thompson (1965) described innovation as a process for reaching such outcomes.

Furthermore, depending on degree of novelty innovation can be classified into different groupings such as incremental, technological, radical and market innovation (Bullinger, 2008). Christensen (1997) and O'Connor (2008) distinguished two types of innovation depending on how the innovation's performance improvement trajectories converts complicated, expensive products and processes into simpler, more affordable ones, i.e. sustaining and disruptive innovation. Hwang and Christensen's (2008) emphasis on the importance of business model innovations for exploitation of emerging, disruptive technologies has been highlighted. Also business model innovations can take many forms, as shown by Lindgardt et al. (2009).

This thesis addresses the full continuum of innovation, without delimitating to a specific form or degree of novelty, but acknowledges, as will be shown, that the more radical form of innovation, the more challenges large firms appear to face in achieving sustaining innovation,

i.e. to innovate over time. When innovation as a process is referred to, the term ‘innovation process’ will be used; otherwise the term innovation will refer to innovation as an outcome. When a specific form of innovation outcome, e.g. radical innovation, is pointed at, this will be clarified.

### 2.2 Innovation in large firms

The ability to succeed in continuously introducing incremental innovations for existing products while simultaneously working on more radical offerings is frequently stated as being a main competitive advantage for firms (Bower & Christensen, 1995; Lawson & Samson, 2001; Leifer et al., 2001). Schumpeterian hypothesis states that innovation activity is promoted by large firms and by imperfect competition, but subsequent researches have shown that large firms are not necessarily always more innovative than their smaller counterparts (Acs & Audretsch, 1987). Schumpeter later acknowledged the weakness in his theory, and in one of his later works instead emphasized the importance of so called cooperative innovative behavior within large firms (Fagerberg, 2003).

There is much ambiguity in research when it comes to the definition of a large firm. For example, Acs and Audretsch (1987) and Symeonidis (1996) defined large firms as firms with more than 500 employees, while Rogers (2004) used the criterion of a minimum of 100 employees. What is clear is that a majority of the definitions have a lower limit of 500 employees as a criterion for the definition of a large firm.

Although large firms possess the resources and functional capabilities that are one of the greatest constraint for startups and small sized firms (Sharma, 1999), there seems to be little evidence of a positive relationship between R&D intensity and successful innovation concentration (Symeonidis, 1996). Authors such as Acs and Audretsch (1987), Christensen and Overdorf (2000), Govindarajan and Trimble (2005), Quinn (1985), Rogers (2004), Sharma (1999) and Symeonidis (1996) have investigated the rigidities that cause large firms to fail at innovation. It was observed that the large firms’ existing customer bases make them reluctant to undertake radical innovation that can cannibalize on existing customer bases and revenues (Aulet, n.d., Tripsas, 1997), but some authors have argued that incumbents are slow not only to introduce radical innovations but also incremental innovations (Henderson & Clark, 1990). Related, Van de Ven et al. (1999) argued that the problem with innovation in large firms often is connected to organizational path dependencies.

#### 2.2.1 Managing two streams of innovation

Throughout the 1980s and 1990s, the dominance of Western industries such as automotive, electrical and semiconductors were challenged by new high-quality and value-added imports (Lawson & Samson, 2001). As a response, many of these organizations rationalized their core businesses, delayed, outsourced and re-engineered for productivity, essentially focusing on mainstream variables like efficiency, quality and speed. Today, however, controlling such variables is merely a minimum requirement for firms to survive in the competitive landscape and unlikely to be sufficient for providing firms competitive advantage in a dynamic marketplace.

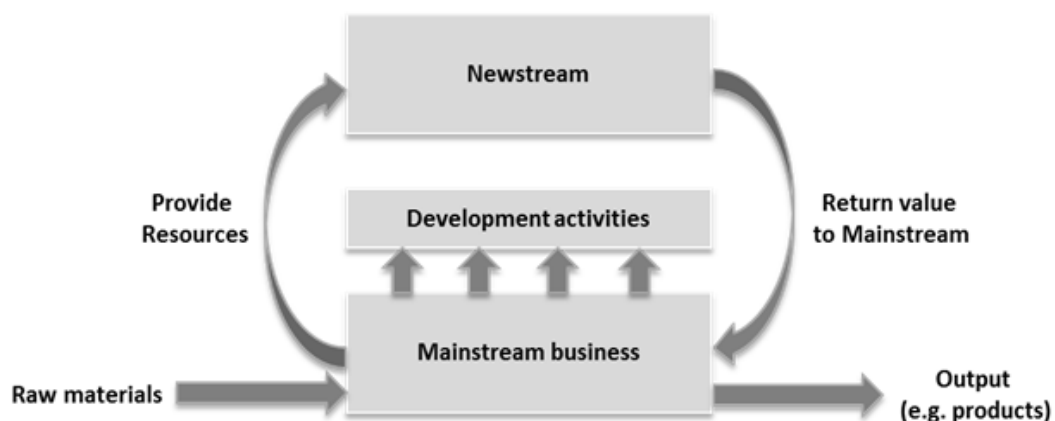
In combination with capabilities for producing mainstream variables as those that were in focus during the 1980s and 1990s, authors such as Assink (2006), Börjesson and Elmquist (2012) and Kanter (2006) have argued that firms also need to possess capabilities for innovation in order to achieve competitive advantage. Lawson and Samson (2001) referred to

## 2. Literature review

the capabilities for cultivating such change within firms as capabilities for producing innovation newstream. The authors argued that successful innovators have the ability to balance these two capabilities by coordinating daily mainstream operations while also cultivating change within the firms.

Researchers such as Lawson and Samson (2001), Kanter (1989), Govindarajan and Trimble (2005), and Tushman and O'Reilly (1996) have in different ways and with different terminologies shown how the management of mainstream competencies can hamper the development of new stream innovation. Mainstream processes are often developed for routinized work, formalized structures where operational challenges and quarterly revenue objectives reinforce a short-term focus (Lawson & Samson, 2001). In contrast, newstream innovation is often described as a force of instability requiring long-term vision and knowledge for development of new products, processes and systems that will underlie future success in uncertain and dynamic environments.

Lawson and Kanter (1989), Samson (2001) and Tushman and O'Reilly (1996) showed that mainstream activities essentially provide funding for newstream development. Constant communication between the oldstream and newstream is therefore required for achieving continuous innovation and competitive advantage. Lawson and Samson's (2001) conceptualized Kanter's (1989) model of the dynamics behind firms' oldstream and newstream businesses, illustrated in figure 3.



**Figure 3.** Lawson and Samson's (2001) conceptualization of Kanter's (1989) model of the dynamics behind firms' oldstream and newstream business.

Several authors have highlighted the different needs of mainstream and newstream processes (Lawson & Samson, 2001). Kanter (1989) argued that organizations are most effective in balancing the tensions of stability and change when the different resource needs of the mainstream and newstream are recognized and their management nearly autonomous. Similarly, Tushman and O'Reilly (1996) discussed the possibility of managing evolutionary and revolutionary change through ambidextrous organizations. This was described as an organization that segregates exploratory units from their traditional units in order to protect them from business as usual, but at the same time coordinates them at the senior management levels for ensuring that the different units have access to established resources such as cash, talent, customers.

Related, Govindarajan and Trimble (2005) stated that innovative ideas are not enough to fuel breakthrough growth in new businesses. These must also encompass organizational agility through the organizational design by surmounting three challenges; they must forget some of

what made their core business successful, i.e. erase the institutional memory; they must borrow those assets from the core business that provide a distinct competitive advantage although inevitably creating tensions between new and old business; they must learn quickly in order to resolve unknowns, i.e. learn from mistakes and review business plans regularly.

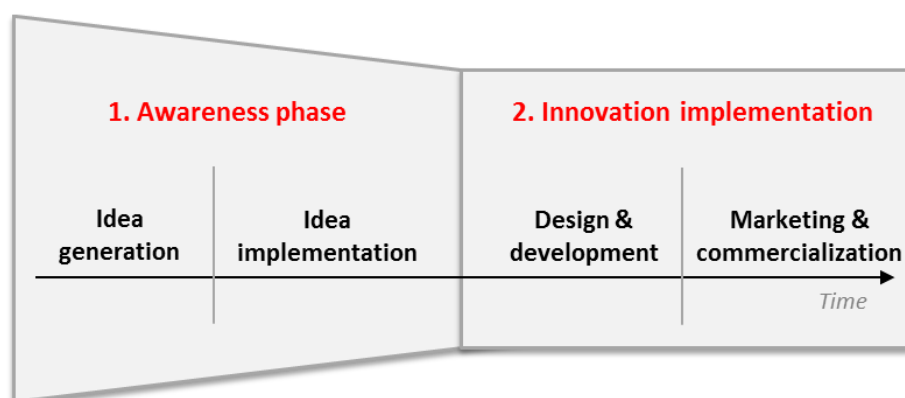
Lawson and Samson (2001) emphasized on the role of management in coordinating the firm's so called oldstream and newstream processes. In fact, the most common reason for innovation failures in large firms is often not a lack of individual creativity but to the fact that managers are unable to, or incapable of, effectively dealing with locating, seizing and navigating a creative idea through the large firm's bureaucratic maze (Sharma, 1999).

### 2.2.2 The innovation process

Several theories have been developed to communicate how innovation occurs in a firm and the factors that affect the outcome of this process (Galanakis, 2006). The early innovation process models were linear, but were replaced by models including technology push and market pull perspectives and later by models including system perspectives on iterative processes (Narvekar & Jain, 2006).

A common definition of the innovation process is one that consists of five steps: idea generation, project definition, problem solving, design/development and marketing/commercialization (Baker & McTavish, 1976; Saren, 1984). Other definitions involve the generation, adoption, implementation and incorporation of new ideas, practices or artifacts within organizations (Damanpour, 1991; Van de Ven et al., 1989), where ambiguity gradually decreases throughout the process (Tornatzky et al., 1980). O'Connor and Ayers (2005) conceptualized radical innovation as consisting of three capabilities; discovery, incubation and acceleration. The discovery phase is about creation, recognition, elaboration and articulation of opportunities, incubation is about evolving the opportunity into a business proposition, and the acceleration deals with ramping up the business to stand on its own.

Although different perspectives on innovation exist, most approaches identify two key stages (Anderson et al., 2004; Axtell et al., 2000). The first is an awareness phase - characterized by generation and implementation of ideas - and the second phase, here referred to as innovation implementation, is characterized by design, development, marketing and commercialization of the idea. Figure 4 illustrates a conceptualization of four phases in a generic innovation process.



**Figure 4.** The innovation process. Figure inspired by Anderson et al. (2004), Axtell et al. (2000) and Mitchell and Goffin (2010).

Inspired by Leonard and Sensiper (1998), an idea is here defined as knowledge, either individual or collective, that is directed towards a specific purpose. Nonaka and Takeuchi (1995) differed between tacit and explicit knowledge and described the difference through a knowledge spiral: explicit knowledge is shared through a combination process and become tacit through internalization, and tacit knowledge is shared through a socialization process and becomes explicit through externalization.

We argue that an idea may take shape as both tacit and explicit knowledge, although explicit knowledge is argued to be a more mature version of an idea. In accordance with Dorst and Cross' (2001) definition, design is defined as a phase of development and refinement together of both the formulation of a problem and ideas for a solution, with constant iteration of analysis, synthesis and evaluation processes between a problem space and a solution space. From this creative process a concept, here defined as the suggestion to a problem, eventually emerges. Thus, we argue that an idea can be defined as both the realization of a problem and the realization of a solution to a problem, and that ideas, just as innovations, can be categorized according to degree of novelty of the resulting innovation.

Most managers are good at planning and execution at the later stages of the innovation process that are characterized by defined processes, clear procedures, and documented responsibilities and roles but they often find it difficult to address the fuzziness during the initial stages (Gassmann & Schweitzer, 2014). At the same time, a growing body of literature suggests that firms should proactively manage the early stages of the innovation process in order to develop successful innovations (e.g. Alam (2006) and Dahl and Moreau (2002)).

Further, research has tended to focus on factors that influence generation of individual ideas rather than their implementation (Alam, 2006; Baer, 2012; Oldham & Cummings, 1996; Unsworth, 1999). In fact, a big fraction of the later years' growing amount of research examining innovation (Anderson et al., 2004; Hülshager et al., 2009) does not make the distinction between idea generation and idea implementation (Baer, 2012). Even when distinctions are made, the idea implementation phase of the innovation processes is often not clearly defined. For example, both Alam (2006), Anderson et al. (2004) and Axtell et al. (2000) refer to idea implementation without clearly defining where and how in the innovation process this implementation takes part. Thus, it is deemed relevant to investigate idea implementation for the continuance of this thesis.

### **2.2.3 Idea implementation and its challenges**

Idea implementation can to a certain extent be defined as the point where ideas from employees are endorsed by the organization (Silva & Oldham, 2012). Creative ideas, i.e. ideas that are useful and more or less novel (Baer, 2012), imply a departure from, or an extension of, existing products, services or ways of doing things (Kanter, 1988; Wolfe, 1995). Although ideas after implementation have the potential to contribute to the firm's growth and survival, research suggests that implementation of breakthrough ideas often entails risk and might lead to disruption of status quo in an organization (Damanpour, 1988; Silva & Oldham, 2012).

Numerous researchers, for example Baer (2012), Van de Ven (1986), and Yuan and Woodman (2010) have argued that idea generation and idea implementation are two activities in the innovation process that are shaped by personal and contextual forces, i.e. that it is a socio-political process. Uncertainty tends to cause disputes due to differences in viewpoints among those who are affected by the ideas, and such conflicts may in turn result in delays in implementation or its ultimate failure (Baer, 2012; Green et al., 2003).

Ideas from employees in large firms are often met with resistance and become subject to scepticism and opposition from decision-makers (Klein, 1984). Wolfe (1995) argued that the likelihood that a creative idea will encounter opposition may have less to do with the idea's merit than with the organizational and personal consequences it may imply. Thus, although there may be forces in an organization that promote the implementation of creative ideas (e.g., an organizational mandate to be innovative), the very nature of these ideas is likely to generate reluctance about their implementation (Baer, 2012; Wolfe, 1995).

Crossan and Apaydin (2010) argued that the role of leadership at all levels of an organization is paramount for spearheading innovation as a process and maintaining its momentum until innovation as an outcome ensues. Kanter similarly stated: "What it takes to get the innovative organization up and running is essentially the same two things all vehicles need: a person in the driver's seat and a source of power" (1983, p. 216). Thus, management plays a decisive role for large firms' capability to stay innovative, and therefore also to implement ideas.

### **2.2.4 Middle management's role in idea implementation**

Managers can be influential as they engage in innovation activities and create contexts that support and influence innovation (Börjesson & Elmquist, 2012; ; Sharma, 1999; Tidd et al., 1997). Nonaka and Takeuchi (1996) emphasized the important role of middle level managers; by interacting with lower and top-level managers, those operating in the middle can parcel and integrate knowledge to proactively pursue some form of newness. In fact, it is widely recognized that middle management play an important role in creating environments that encourage innovation (e.g. by Heidemann Lassen et al., (2009), Kuratko et al., (1990), Hornsby et al. (2002) and Westley (1990)).

Sims (2003), as well as Wooldridge et al. (2008), broadly defined the term middle level management as an extension to managers located below top managers and above first-level supervision in the organizational hierarchy. Middle managers cannot be defined based on where they sit in the organizational chart but as connections between the organizational strategic and operational levels (Wooldridge et al., 2008). In that sense, middle managers act as the hub of all information flows within the firm (Floyd & Lane, 2000) and have a double role to play, one as accomplice of the top management team and other as representatives of the organizational units (Sims, 2003). As middle managers process the information available from various sources and further pass it on to the top management, they add their own interpretation to the information (Boyett & Currie, 2004; Sims, 2003).

Dasgupta (2015) argued that middle managers are in an important position to identify different business opportunities with respect to discontinuities in the environment. It is therefore imperative to integrate the perspective of the top management team and middle level managers with respect to environmental discontinuities. Integrated perspective is also required in order to bring in stability with respect to current strategy (Raes et al., 2011). Middle managers further play an important role in championing changes by bringing entrepreneurial and innovative ideas to the attention of the top management (Kuyvenhoven & Buss, 2011; Lassen et al., 2009). They not only evaluate the strategic merits of entrepreneurial initiatives emerging from lower levels but also try to gain the attention and support of the top management for the entrepreneurial initiatives that fall outside the organizational agenda (Ren & Guo, 2011).

However, in order for middle managers to be able to encourage innovation, the right internal conditions need to exist within the firm (Kuratko et al., 1990; Pettigrew et al., 2003). O'Connor (2008) argued that systems at various levels of a firm are nested and interrelated,

meaning that systems at lower levels are dependent on higher-level systems and vice versa. Thus, a firm's innovation capabilities at a specific hierarchical level, for example the middle management level, are influenced by external factors such as, for example, higher level managers. However, research on the intra-firm conditions fostering innovation is limited and often differs from research on leadership of innovation at the middle management level (Mumford & Licuanan, 2004). One field where environmental factors for firms' innovative performance have been discussed is in that of corporate entrepreneurship (Kuratko et al., 2005). For example Burgelman (1983) mentioned the effects of a firm's culture and strategy for fostering bottom-up processes.

Research on the personal and contextual factors shaping idea implementation as a part of the innovation process has until now been limited (Baer, 2012; Yuan & Woodman, 2010), and, as we have shown, this is very much valid on a middle management level. A review of existing research on innovation capabilities is deemed relevant for deeper understanding on the topic.

### 2.3 Innovation capabilities

The key to firm's competitive advantage lies in its capability to innovate (Björkdahl & Börjesson, 2012). In order to understand how firms achieve and sustain competitive advantage, Teece et al., (1997) developed the dynamic capabilities approach defined as the firm's ability to integrate, build and reconfigure internal and external competences to address the rapidly changing environment, i.e. the ability to renew resources and competences in response to environmental changes. Although several authors, such as Eisenhardt and Martin (2000), Teece (2007) and Zollo and Winter (2002) later endorsed this view on dynamic capabilities, the discussions were rather abstract (Börjesson & Elmquist, 2012).

The resource based view of the firm is based on the fact that resources are valuable, rare, inimitable and non-substitutable, and create a platform for competitive advantage to the firm (Brown, 2013; Prahalad & Hamel, 1990; Wernerfelt, 1984). However, the resource based view and dynamic capabilities theory have a number of weakness. The resources that contribute to effective performance are often difficult to identify within a firm (Lawson & Samson, 2001). Also, many resources are complementary and cannot be considered in isolation to other factors prevalent within the organization. The resources that provide a competitive advantage to a firm today might become core rigidity to the organization.

Börjesson and Elmquist (2012) argued that the view of dynamic capabilities is still important to the context of innovation capabilities since the application of new knowledge inherently is linked to risk and uncertainty. Innovation capabilities differ from dynamic capabilities in the way that the innovation capabilities are specifically defined as the ability to continuously transform knowledge and ideas into new products, processes or services for the benefit of the firm and its stakeholders (Lawson & Samson, 2001).

Assessing the innovation capability of a firm is important as it provides insights into ways in which a firm can develop or improve its ability to stay innovative, whereas organizational capability in general defines the ability of the firm to deploy its available resources (Björkdahl & Börjesson, 2012). According to Christensen (1997), organizational capabilities consist of three building blocks: resources, processes and values. Resources consist of people, cash, technology, equipment etc. Processes consist of decision making protocols, communication methods and various ways of interaction between departments and functions. Values are the



mindsets prevalent in the organization, norms and ways of working within the organization (Björkdahl & Börjesson, 2012).

However, firms face several challenges in development and commercialization of ideas, i.e. innovation (Symeonidis, 1996). Therefore, recent years studies have tried to explicitly assess the capabilities required for innovation, i.e. the concept of innovation capabilities (Holm & Sjölander, 2015). Innovative companies are those that are able to systematically create and assimilate new knowledge (Assink, 2006; Börjesson & Elmquist, 2012) where the organization's ability to innovate is based on its ability to transform radical, new ideas and concepts into potential opportunity in the market white space, and develop them into marketable and effective innovations.

Research highlights corporate culture and strategy as two important factors impacting the innovation capabilities of a firm (Cooper, 2011; Dougherty & Hardy, 1996). Cooper (2011). Dougherty and Hardy (1996) discussed corporate culture and climate as drivers of innovation work in large firms, where management and leadership play integral roles. Further, Dougherty and Hardy (1996) and Hultgren and Tantawi (2014) mentioned the underlying strategy as one of the most important aspects when working with innovations. During the implementation of ideas strategic intent provides consistency to short-term action, while leaving room for reinterpretation as new opportunities emerge. Large firms can either develop a comprehensive innovation strategy or incorporate innovation as a meaningful component of the organization's strategy (Cooper, 2011; Dougherty & Hardy, 1996).

In addition, Dougherty and Hardy (1996) state that in order to develop capabilities for sustained innovation, large firms need to connect the firm to the innovation process through resource allocation, and provision of collaborative structures and processes to solve problems creatively and connect innovations with existing businesses. The capabilities to innovate are not ad hoc but are repeated processes that the firm intentionally practices to improve the capability and to create unique value to the firm compared to its rivals (Brown, 2013). These repeated processes are considered to be a part of the firm's organizational routines.

In order for the capability to provide an advantage, resources must be deployed effectively. However, Brown (2013) stated that the firm that possess the resources must also possess the capability to utilize those strategic assets. Thus, resources are necessary but insufficient for competitive advantage as they are unreliable predictors of future success. Many managers with traditional view of strategy focus their ambitions to match current resources of the firm whereas strategic intent creates misfit between resources and ambitions (Hamel & Prahalad, 1989). The management then focuses on closing the gap between current resources and future ambitions.

Innovation capabilities models are aimed at building a theoretical framework to highlight the actions managers and stakeholders can take towards improving their innovation capability (Lawson & Samson, 2012). Innovation capability in itself is understood to be not a separately identifiable construct, it is rather composed of reinforcing practices and processes within the firm. Various researchers have categorized and grouped elements considered to compose an organization's innovation capability and there are several frameworks in the literature for assessing innovation capabilities.

### 2.3.1 Frameworks for assessing innovation capabilities

Managers are embedded in larger systems where their mental models are not sufficient for understanding the system's full complexity (Sterman, 2000). Research has shown that the ability to adapt is an important skill in high-performance firms (Teece et al., 1997), and shared mental models can offer an explanation of how individuals, as well as teams, can adapt to such changes. Argote and Ingram (2000) argued that integration of knowledge in tools and frameworks when communicating and interacting within the firm is vital for the firm's competitive advantage. Thus, a structured conceptualization of innovation capabilities would be useful for managers to understand their firm's innovation capabilities.

Innovation capability itself is not a separately identifiable construct (Lawson & Samson, 2001), and numerous frameworks have been developed for defining and structuring the concept (Holm & Sjölander, 2015). Most of these frameworks conceptualize innovation capabilities as consisting of building blocks or factors influencing and shaping the firm's innovation capabilities. The models differ due to the authors' diverging purposes and differences in their mental frameworks when putting together various factors involved in an organization's innovation capability. However, there is a certain degree of resemblance prevalent in most models. For example, the factors innovation strategy, exploratory processes, resources and organizational culture are consistent in most frameworks on innovation capabilities. On the other side, even though many factors are shared by the different models, they often differ in the definitions and purpose provided by the respective authors.

Table 2 provides an overview of some of the existing frameworks conceptualizing innovation capabilities.

**Table 2.** Summary of various frameworks of innovation capabilities.

Name	Lawson and Samson (2001)	Börjesson and Elmquist (2012)	O'Connor et al. (2008)	Holm and Sjölander (2015)	Ericsson (2015 A)
Elements	Vision and strategy	Strategic intent	Goals and objectives aligned with firm's strategic intent		Innovation strategy and visions
				Organizational structures	Organizational structures
	Harnessing the competence base	Resources	Attention to identification and nurturing of requisite skills	Resources	Organizational structure
	Management of technology		External linkages		
	Organizational structures and systems	Processes	Organizational structure	Processes	Culture
	Reward systems		Governance and decision making		
	Creativity and idea management		Learning-oriented exploratory processes		
Organizational intelligence		Market sensing			
Culture and climate	Mindset	Appropriate culture and leadership context	Values	Ways of working	

Deriving from literature on management of innovation, Lawson and Samson (2001) identified seven major elements that encompass innovation capabilities: vision and strategy, harnessing the competence base, organizational intelligence, creativity and idea management, organizational structure, systems culture and climate, and management of technology. With this framework, Lawson and Samson made an attempt to adopt a holistic company-wide approach to the management of innovation, by describing problematic areas fundamental for success of innovation (Holm & Sjölander, 2015).

After Lawson and Samson's (2001) framework, authors such as Björkdahl and Börjesson (2013), Börjesson and Elmquist (2012) and O'Connor (2008) have made similar attempts to conceptualize innovation capabilities, differing primarily in their definitions of the factors that form the building blocks of the framework and the groupings of them (Holm & Sjölander, 2015). Björkdahl and Börjesson's (2012) developed a framework for identifying the key operational aspects of innovation capabilities. The framework highlights eight dimensions such as strategy for innovation, prioritization, culture, idea management, external environment and linkages, implementation, systems and decisions rules, and organizational dimensions and learning. O'Connor et al.'s (2008) framework emphasizes major innovation dynamic capabilities and identifies seven elements such as: an identifiable organization structure, interface mechanisms, exploratory processes, requisite skills, governance and decision-making mechanisms, appropriate performance metrics, and an appropriate culture and leadership context.

Börjesson and Elmquist's (2012) framework cluster Lawson and Samson's (2001) and O'Connor's (2008) frameworks, describes problematic areas vital for successful innovation in a more high-level framework describing the organizational structure supporting the firm's innovation capabilities (Holm & Sjölander, 2015). It consists of four factors: strategic intent, resources, processes and mindset. In August 2015, Ericsson's Product Development Unit Packet Core conducted an 'Innovation Competence Training' where they employed a similar framework to build innovation capabilities (Ericsson, 2015 A). As illustrated through figure. 5, the framework consists of four major factors: People, Culture, Ways of Working, Organizational Structures. Innovation strategy and vision is considered as the interplay that connects all these four factors and helps the firm to move forward as one coherent unit.



**Figure 5.** Innovation capability framework from Ericsson's Packet Core department (Ericsson Packet Core, 2015).

### **2.3.1.2 An innovation capability framework consisting of five factors**

As discussed in previous sections, current literature on innovation capabilities widely uses factors such as innovation strategy and vision, organizational structure, resources, ways of working and culture. This section will further examine how each of these factors enable the firm to convert an idea into novel innovation, with emphasis on idea implementation as a part of the innovation process. The following factors will be used to assess idea implementation stage of the innovation process at large firms.

### ***Innovation strategy and vision***

A firm's strategy is derived from the vision of what the firm's want to achieve (Lawson & Samson, 2001). Björkdahl and Börjesson (2011) stated that the innovation strategy needs to be clear, communicated and understood throughout the firm to properly transfer the vision to the firm's employees. Therefore it is important for firms to establish a comprehensive strategy towards innovation in order to comprehend how innovation is managed at a firm (Rådesjö & Sandström, 2013). Lawson and Samson (2001) argued that in order to bring a sense of importance regarding innovation, the innovation strategy should be connected to the firm's vision. But a strategy is only valuable to a firm only when it has the means to implement it, and Björkdahl and Börjesson (2011) talk about the importance of prioritization in deciding what strategy need to be implemented and whether decisions are aligned to operations or not. Also, key decision makers and employees should be aware of their roles and their responsibilities in implementing the strategy.

The link between vision, strategy and innovation is important for effective innovation management as the resources, products, processes and systems are configured based on the strategy (Lawson & Samson, 2001). Firms need to constantly make decisions with respect to what businesses they should engage in and what type of market they should be involved with (Björkdahl & Börjesson, 2012). The decisions relating to strategy as usually made by top management or higher managers and thus the level of management commitment and engagement is crucial in deciding the speed at which decisions need to be taken. Thus firms need to possess a long term vision along with a strategic direction in order to move forward with successful innovation. Lawson and Samson (2001) further argued that it is in particular good if the vision for innovation infuses a sense of urgency with the employees, in order to create the ultimate desire for creativity.

### ***Organizational structures***

The organizational structure of a firm provides the means to develop capabilities for a firm to innovate without which the other components of the innovative system are highly unlikely to succeed (Lawson & Samson, 2001). As a firm grows in size, it inherently adds many layers to the organizational structure resulting in bureaucracy and formalized work flows (Kanter, 1983; Lawson & Samson, 2001). Thus, excessive bureaucracy would limit the flow of ideas and creativity within the organization (Assink, 2006, Sharma 1999). In order to motivate and empower employees to innovate, there needs to be permeable organizational silos to break down the barriers that separate functions, product groups and business units (Lawson & Samson, 2001).

Hierarchies help firms to achieve complex organizational tasks but they also lead to slow decision making processes resulting in properties that are inimical to innovation (Teece, 1996). In large hierarchical organizations, decision making processes tend to be bureaucratic involving formal submissions, approvals etc. The decision making process is often centralized at large firms thereby limiting the autonomy of the lower managers (Sharma, 1999). Another important aspect is the awareness among managers and employees on their roles and responsibilities to carry out innovation.

It is important that group functions or departments within a large organization have employees with clear decision making responsibility for innovation (O'Connor, 2008). Streamlined structures for handling innovation would ensure proper resource allocation, skills

sharing, learning etc. thereby leading to less pressure on innovators and improved chances of success (Zollo & Winter, 2002).

### **Resources**

Assink (2006) identified the unwillingness of firms to cannibalize on existing products or business as a major obstacle towards innovation in firms. Firms are often unwilling to divert resources from existing businesses into new promising ideas and projects. In order to be competitive, a firm's resources should be valuable, rare, inimitable and non-substitutable (Teece et al., 1997). Resources are categorized as tangible and intangible sources consisting of raw materials, human resources such as labor and skills, capital, means of production etc. (Lawson & Samson, 2001). Christensen (2013) identifies resources as one of the building blocks for innovation and the existence as well as combinations of these resources that provide the firm's competitiveness. Further, in order to stay innovative and competitive, firms must possess the ability to exploit their resources towards a specific purpose and employees must also be provided slack time to work on their ideas (Ahmed, 1998). Firms must also have the ability to allocate slack time and resources for employees to experiment with ideas and prototypes

For successful innovation, firms must possess the ability to correctly and effectively direct resources to where they are required (Lawson & Samson, 2001). The innovative firms are able to combine and recombine resources to help increase the number of innovative initiatives and improve the probability to stimulate innovation and also use formal funding channels to encourage creativity, risk taking and entrepreneurship. Successful mobilization of resources also requires the support of top level management and key decision makers at every stage of the innovation process (Tidd et al., 1997). Thus, managers at the higher level should have the skills and knowledge to implement ideas with the available resources in an efficient manner.

### **Culture**

Corporate culture is characterized by factors such as norms, assumptions, values and beliefs within an organization while organizational climate is linked to the way each individual feels and perceives the work environment (Longo, 2012). Several researchers have noted that climate is crucial in order to direct attention of employees towards innovation (Scott & Bruce, 1994). Since corporate culture is associated with individual behavior, shared values and beliefs, assumptions, norms etc, organizational culture is often a complex and difficult concept for firms to handle. In order to clearly distinguish, culture could be understood to be "as it should be", whereas climate is about "how it is perceived to be" (Longo, 2012).



**Figure 6.** Organizational climate and culture (inspired by Longo (2012)).

Organizational culture resides at a deeper level of individual's psychology than does climate (see figure 6). While climate can be observed through policies, practices and rewards, the beliefs and values of culture are not so distinctly visible (Schneider et al., 1996). Assink

(2006) argued that in order to accept radical ideas, there need to be a climate that accepts uncertainties, unusual ideas and fail-learn approach. He further stated that there are four components that constitute a culture in a company: tolerance of ambiguity, empowered employees, creative time and communication, both internal and external.

Creativity in a large firm is often limited due to path dependency thereby resulting in ideas looking identical to existing product lines or services (Teece et al., 1997). Uncertainty and risk are an integral part of radical innovation (O'Connor, 2008). Therefore, normal methods of working or planning are unsuitable to handle ideas that would transform markets and thereby render old technologies obsolete (Christensen, 2013). Ability to take risks, work under uncertainty and willingness to take risks are necessary for long term success (Assink, 2006). Tolerance of ambiguity among managers is important in order to engage in radical innovation (Lawson & Samson, 2001). Reward systems provides motivation for employees to engage in innovative activities and highly innovative firms foster creative behavior by providing rewards, bonus and other forms of incentives to employees.

### *Ways of working*

Innovation, and especially idea implementation, is considered to be a large socio-political process where the networking possibilities and capabilities are defined as crucial (Baer, 2012). There must be systems put in place to motivate employees to engage in risky endeavor of pursuing ideas and provide the social relationships within the organization that enable them to draw upon resources and support from decision makers. This influences the socio-political process and increases the chances of success. Related, Anthony et al. (2006) argued that it is beneficial if decision makers to some extent also act as problem solvers in the operational work and not only act as so called dictators.

Further, reward systems are powerful means to motivate employees but managers should also be aware of the effects of reward systems on behavior (Lawson & Samson, 2001). Another important way of working with innovation is stretch goals for innovation. These goals create a bias towards innovation and push employees to engage in it in order to achieve the stretch goals. For example, 3M is notable for its stretch goals which are used as a means to improve innovation.

Both formal and informal processes serve as tools to achieve a specific purpose as they provide a collection of related and structured activities aimed at producing a specific purpose or product (Christensen, 2013). At the same time, standardized formal processes or ways of working reduce the uncertainty in the innovation process. Christensen (2013) highlighted these as one of the three foundations of innovation capabilities. These processes or ways of working are a key mechanism for stimulating, measuring and reinforcing innovation (Lawson & Samson, 2001). In order to move forward with implementing ideas, there needs to be systems and structures to allow communication mechanisms and access to resources. Lawson and Samson (2001) talked about maintaining the balance between newstream and mainstream activities within an organization. Also, Björkdahl and Börjesson (2011) mentioned the importance of a firm to convert potential ideas into new opportunities by rethinking ways of operations in implementing ideas.

Organizational learning is the ability to identify, assimilate and exploit knowledge in order to achieve competitive success (Guan & Ma, 2003). Learning from past failures, knowledge sharing across the firm, collaborating both externally and internally requires structured mechanisms that can be applied in a useful manner (Börjesson & Elmquist, 2003). O'Connor

(2008) discussed the exploratory processes where firms must have the processes that enable learning and exploration. These processes improve the odds for radical ideas as they enable knowledge creation and ability to work under uncertainty

Table 3 represents a conceptualization of the idea implementation stage of the innovation process, using the structure of Ericsson's (2015 A) innovation capability framework.

**Table 3.** Conceptualization of a framework for assessing idea implementation at large firms.

<b>INNOVATION STRATEGY AND VISION</b>	<ul style="list-style-type: none"> <li>• Nature of innovation strategy             <ul style="list-style-type: none"> <li>• Is strategy derived from the firm's vision?</li> <li>• Link between vision and strategy?</li> </ul> </li> <li>• Diffusion and adaptability of the innovation strategy             <ul style="list-style-type: none"> <li>• Awareness of roles and responsibilities?</li> <li>• Are there means to implement the strategy?</li> </ul> </li> <li>• Role of leadership in the innovation strategy             <ul style="list-style-type: none"> <li>• Level of management commitment and engagement?</li> <li>• Speed of decision making?</li> </ul> </li> </ul>
<b>ORGANIZATIONAL STRUCTURES</b>	<ul style="list-style-type: none"> <li>• Group responsible for major innovation/radical innovation             <ul style="list-style-type: none"> <li>• Do they have a supporting role?</li> <li>• Do they have an educating role?</li> </ul> </li> <li>• Managerial systems and interfaces between these             <ul style="list-style-type: none"> <li>• Are the reporting relationships clear?</li> <li>• Are there interface mechanisms?</li> </ul> </li> <li>• Permeability of the organizational structure             <ul style="list-style-type: none"> <li>• Can people get access to decision makers?</li> <li>• What is the organization structure's role for this?</li> </ul> </li> </ul>
<b>RESOURCES</b>	<ul style="list-style-type: none"> <li>• Availability of tangible resources             <ul style="list-style-type: none"> <li>• Are fundings towards experimentation and prototyping readily available?</li> <li>• Funding towards ideas that are believed to be radical</li> <li>• Funding towards ideas that are believed to be incremental?</li> </ul> </li> <li>• Availability of intangible resources             <ul style="list-style-type: none"> <li>• Skills and knowledge at all hierarchical levels regarding how to implement ideas?</li> <li>• Slack time and safe places for experimentation/exploration of ideas?</li> <li>• Is customer/competitor information readily available?</li> </ul> </li> <li>• Ability to exploit tangible/intangible resources for a specific purpose.             <ul style="list-style-type: none"> <li>• Closeness to decision makers?</li> </ul> </li> </ul>
<b>CULTURE</b>	<ul style="list-style-type: none"> <li>• Communication             <ul style="list-style-type: none"> <li>• Is there a culture of mutual sharing/trust between people/teams/functional units?</li> <li>• Are people encouraged to discuss and share ideas?</li> </ul> </li> <li>• Decision making             <ul style="list-style-type: none"> <li>• Is there a tolerance of ambiguity from decision makers?</li> </ul> </li> <li>• Work norms             <ul style="list-style-type: none"> <li>• Expectation of creative slack?</li> <li>• Is failure accepted?</li> <li>• Attitude towards 'under the table projects'?</li> </ul> </li> <li>• Motivation             <ul style="list-style-type: none"> <li>• Are people incentivized (e.g. through support and rewards)?</li> </ul> </li> </ul>
<b>WAYS OF WORKING</b>	<ul style="list-style-type: none"> <li>• System and structures             <ul style="list-style-type: none"> <li>• Characteristics of the socio-political processes?</li> <li>• Clarity and flexibility of formal processes for driving ideas?</li> <li>• Differences between treatment of incremental/radical ideas?</li> </ul> </li> <li>• Systems for motivation             <ul style="list-style-type: none"> <li>• Reward systems?</li> <li>• Stretch goals for innovation?</li> </ul> </li> <li>• Agile working (learning and unlearning)             <ul style="list-style-type: none"> <li>• Speed of moving forward with ideas?</li> <li>• Learning-orientation: experimental action and fast iterations?</li> </ul> </li> </ul>



## 3. Methodology

### 3.1 Research purpose

The main purpose of this master thesis was to perform a cross-organizational and cross-industrial comparative study on large firms' efforts to manage and stimulate idea implementation. This research would thereby enable a better understanding of the inhibitors or enablers of ideas and concepts that are different or more innovative to make it into further development. The firms participating in the multi-firm study were Ericsson, Volvo Cars and Hilti. The study was undertaken by interviewing employees at a middle management level as this was the task assigned to the researchers by the host firm Ericsson. The purpose of the master thesis is based on what Saunders et al. (2009) describe as descriptive in nature, as the different firms' approaches for driving and stimulating innovation needed to be described in order to enable a comparison between the firms, and at the same time exploratory, as a comparison aimed at generating new insights for the researchers, as well as the participants of the study.

### 3.2 Research approach

The research approach of this study was what Saunders et al. (2009) referred to as deductive, as the focus was to empirically collect data related to idea implementation in the three participating firms and combine it with existing theory on innovation capabilities and idea implementation. According to Easterby-Smith et al. (2012) language data in the form of interviews is suitable when the aim is to gain insight into social and organizational realities, as would be the case in this study with focus on understanding the different firms' innovation practices, especially idea implementation. Thus, the study predominantly applied a qualitative research approach (Saunders et al., 2009).

### 3.3 Research strategy

As the purpose of the study was exploratory and descriptive, a research strategy that could answer 'how' and 'why' questions was necessary. Focus is on contemporary events due to the fact that the study aimed at comparing current practices within three firms, where control of behavioral event was neither sought for, nor deemed necessary. Therefore, in accordance to Yin's (2003) framework for research strategies, a strategy of performing case studies was considered relevant for the research.

Case studies are suitable for deep and detailed investigations (Rowley, 2002) with exploratory and explanatory purposes where answers to questions such as why, how and sometimes even what, are sought (Saunders et al., 2009). In this study detailed investigations were considered necessary for drawing conclusions on topics such as culture and ways of working within the firms. Case studies are further particularly valuable for illustrating abstract concepts (Siggelkow, 2007), which seem to be appropriate for investigating the concept of innovation capabilities. In fact, the method used for this research study was what Stake (1995) identified as a collective and comparative case study, expressed by Baxter and Jack (2008) as a multiple case study. By comparing different cases, similarities and differences between them can be examined (Easterby-Smith et al., 2012).

Since the study aimed to exploring differences in idea implementation among the three firms on a middle management level, a research strategy that could answer ‘how many’ questions for investigating the differences between replies and perceptions was needed. This was done through a survey that was sent out to all interviewees. The advantage of combining confirmatory and exploratory research is that a greater diversity of views can be presented and stronger inferences can be provided (Easterby- Smith et al., 2012). The mixing of methods can also stimulate creative and inventive methods and help synthesis and integration of theories (Jick, 1979); this was the goal for the data analysis.

According to Olkkonen (1994), a concept is an abstract and general definition of a phenomenon. Thus, the concept of innovation capabilities must be broken down into smaller components in order to understand how they affect a firm’s, overall innovation capabilities. This study followed a framework used internally by Ericsson’s Packet Core unit at Lindholmen Ericsson, consisting of the following five variables: organizational structure, innovation strategy and vision, resources, culture, and ways of working (Ericsson, 2015 A). After assessing a multitude of frameworks on organizational innovation capabilities, it was evident that these factors have an overarching relevance on the innovation outcomes of a firm. Also, due to the limited resources and duration of the research, a framework familiar to both academia and the host firm, i.e., Ericsson, is considered to have potential to reduce complexity and render more accuracy to the study.

#### **3.3.1 Identifying participating firms and stakeholders**

As a comparative study was to be performed and data on the participating firms’ innovation capabilities would be shared (although to a controlled and limited extent), the study benefitted from being cross-industrial. In this way, situations with firms hesitating to participate due to competitors’ presence could be avoided. Another advantage of comparing firms across industries as practices that are not prevalent within the firm’s own industry trends in this could way be explored.

##### ***Selection criteria for participating firms***

Ericsson’s product development unit Packet Core in Gothenburg requested the study. Ericsson, employs 118,000 people in more than 180 countries (Ericsson, 2015 B), and is considered a large firm. In this study large firms were broadly identified as firms listed under large cap of the OMX Stockholm Stock Exchange with a market value of more than \$10 billion (Investopedia, n.d.), and if not listed, Symeonidis’ (1996) criterion of more than 500 employees was used. Initial literature studies strongly indicated that innovation management within large firms to a big extent differs from the management of innovation within small firms (Govindarajan & Trimble, 2005; Rogers, 2004) and therefore, in order to be able to make relevant comparisons between different firms, the study was delimited to large firms.

As mentioned, a sample containing firms from a multitude of industries was considered advantageous. Three firms were chosen from the table in Appendix 1 (summarized in table 4), of which the contact was based on an initial and brief investigation on leading firms within various sectors, their willingness to participate, and their potential availability.

**Table 4.** Firms participating in the multi-firm study.

NAME OF THE FIRM	NUMBER OF EMPLOYEES
Ericsson	42.1 (Ericsson, 2015 D)
Volvo Cars	Unlisted, - around 28.000 employees (Volvo Cars, 2015)
Hilti	Unlisted - around 22.000 employees (Hilti, 2014)

In order to contact relevant stakeholders that could be interested in supporting their firms' participation in the comparative study, what Easterby-Smith et al. (2012) referred to as snowball sampling was performed. In the initial phase of the research, stakeholders within all the companies were identified through searches on social networking sites. After decision makers had been identified, the firms' switching boards were contacted. If the concerned stakeholder were interested, he or she was either asked for an initial meeting, or to recommend stakeholders that the researchers could contact. The outcome was that, in addition to Ericsson's Packet Core department, Hilti and Volvo Cars participated in the study.

### 3.3.2 Data collection

In order to apply the selected framework for exploring innovation practices, a multitude of data collection techniques was used – official and unofficial firm information as well as interviews. The framework was primarily explored through approximately one hour long interviews that were recorded and later transcribed. When investigating the knowledge and perceptions of the interviewees, laddering, an interviewing technique where a seemingly simple response to a question is pushed by the interviewer in order to find subconscious motives (Easterby-Smith et al., 2012), was used to make the respondents reveal their core values. Lastly, a questionnaire complementing the data retrieved through the interviews was sent out to all interviewees, in order to widen the understanding of the differences between the attitudes towards, and knowledge about, idea implementation.

#### *Sampling of interviewees*

A critical issue of the research study would be the relatively small sampling number of interviews to assess firms with more than 500 employees and \$10 billion in market capital. The sampling was done with the help of the contact person from each of the firms, a person with a supervisory role often within a department responsible for fostering innovation, who helped scheduling interviews with a minimum of ten stakeholders. Here, a sampling technique called purposive sampling (Saunders et al., 2009) was used, where respondents considered the most suitable for answering the research questions were chosen. As all three firms have a history of primarily selling products in combination with services, and as Ericsson's Packet Core department is a product development department, stakeholders involved with product development were primarily targeted.

However, as the researchers did not intend to limit the research to product innovations, and as product development was assumed to be dependent on integration with other functions such as marketing and research, a random sample of interviewees from other departments/teams/divisions, such as accounting, finance, processing, and R&D was also

made. Here, the snowballing method, a non-probability technique of sampling (Bryman & Bell, 2015) was used. In total, ten people were interviewed at Hilti and Volvo Cars and 14 at Ericsson's Packet Core department. Appendix 2 provides information on the characteristics of the different interviewees resulting from the sampling within each of the firms.

#### *Interview and survey strategy*

The interviews were one hour long and semi-structured, employing an interview technique that includes pre-prepared questions that are open and thereby allow for a discussion while at the same time enabling comparisons of the results through the standardized question formats (Bryman & Bell, 2015). As mentioned, the interviews were documented through recordings and transcriptions. They were conducted either face-to-face or via video conference wherein the latter being predominantly the case with Hilti employees who were located in Liechtenstein. All interviewees were asked for due permission prior to recording the interview.

The survey, which was sent to all the interviewees, was standardized, meaning that each respondent is exposed to the same questions and the same system of coding responses (Siniscalco & Auriat, 2005). The aim with interviewing standardization is to ensure that differences in responses to questions can be interpreted as differences in opinions among respondents rather than differences in the processes producing the answers. Totally 28 closed questions were included, where the respondents are restricted to a finite and thus manageable set of responses (Siniscalco & Auriat, 2005).

In this study a set of alternatives organized on a Likert scale - a set of statements offered for a situation under study (Joshi et al., 2015). The key assumptions in a Likert scale survey is that the presentation of statements on a scale needs to be such that the participants are allowed to choose clearly opposed alternatives (Likert, 1932). In this case, the participants were asked to show their level of agreement from strongly disagree to strongly agree. Response categories with closed questions have the advantage of simplifying coding for the comparable purposes (Siniscalco & Auriat, 2005).

The questions were based on the five factors of the innovation capabilities framework discussed in the literature review section, and were all mandatory meaning that it could be argued that respondents were forced to answer all questions without giving them an opportunity to skip a particular question. Thereby the interviewees were encouraged to reflect their situational awareness with regards to the innovation process. The interview guide and the survey questions can be found in Appendix 3. In the same appendix, a sample of questionnaire results is presented is chosen based on potential for providing additional clarifications to the interview findings.

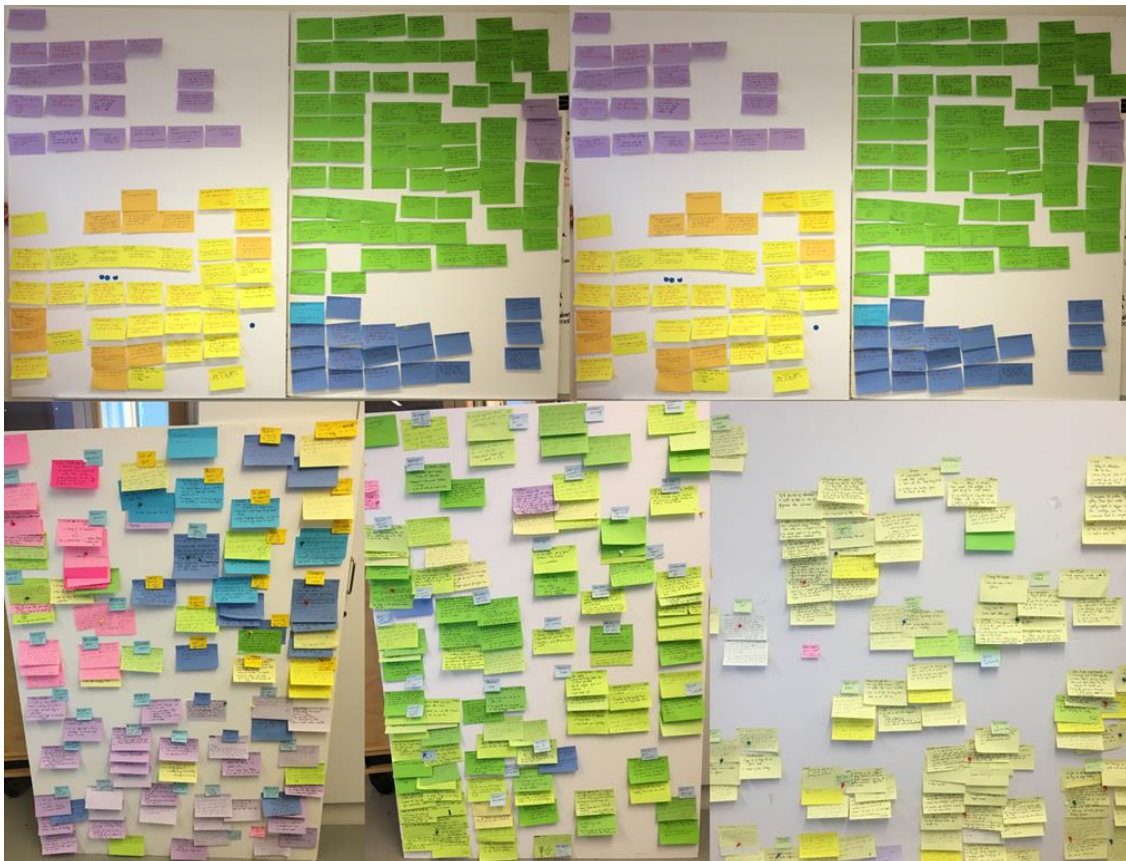
### 3.4 Data analysis

According to Yin (2003), there are two main ways of analyzing data when conducting a case study: within-case and cross-case analysis. As this thesis entailed a multi-firm case study, the choice of a cross-case analysis, where several cases are compared to each other (Yin, 2003), was deemed suitable. However, before conducting the comparisons, each firm's innovation capabilities with regard to idea implementation had to be understood. Therefore intra firm-case analyses were first performed on each of the participating firms.

It should be noted that the information retrieved through the interviews and questionnaires did not aim to represent the full truth of existing practices towards idea implementation within the different firms. Rather, it was the perceptions and knowledge of the interviewees that was sought for, reflecting what was known by stakeholders related to different idea implementation endeavors, as well as what practices were applied, rather than what was supposed to be.

### ***Structural coding***

As data was obtained mainly from semi-structured interviews, large amounts of qualitative information needed structuring in order to be possible to analyze. This was achieved through clustering and coding techniques, mainly through what Namey et al. (2007) referred to as structural coding. Through labeling and indexing the transcriptions the interviews were matched to the framework on innovation capabilities, and thereafter key information from the interviews was chosen out and written down on color-coded post-its. Each color represented one segment of the framework and codes in the form of symbols represented different interviewees in order to secure their anonymity. The information within the each area of the innovation framework was thereafter further clustered in order to gain a better overview. This procedure resulted in white boards such as the ones illustrated in figure 7.



**Figure 7.** Structural coding of the interview data.

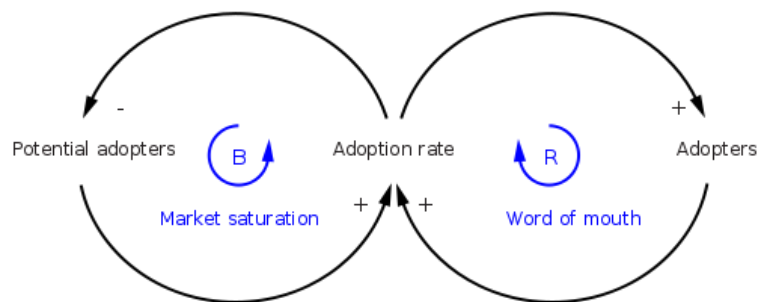
After the within-case study had been conducted, a cross-case analysis was performed through an iterative process where key findings from each firm was entered into the innovation capability framework and the findings compared between the firms. If gaps were noted, the researchers returned to the transcriptions to find empirical findings that could be translated into comparative results. Key insights from each of the firms were finally transferred to a comparative table (see Appendix 4), in order to ease the final comparisons.

#### *Causal loop diagrams*

The table thus had the purpose of enabling comparisons. However, since the concept of innovation capabilities needs to be treated as an interrelated system (Lawson & Samson, 2001), System Dynamics was used for enabling an overlook of the system dynamics constituting the main differences in the firms' practices for implementing ideas. System Dynamics is a concept and a set of tools that has been used to model and analyze complex systems in companies, businesses, complex projects and more (Haraldsson & Sverdrup, 2003). Within the frames of System Dynamics, causal loop diagrams were applied - notations in System Dynamics that can be used for providing a conceptual overview of the interconnected nature of a system (Sterman, 2000). The key principles of causal loop diagrams include:

- A visual representation through a causal loop diagram
- Social constructions, represented through variables, with key concepts, actions and relationships between them
  - Variables connected by arrows denote the causal links between them
  - Each causality is assigned a + or -, to indicate how the dependent variable changes when the independent variable changes
- Feedback loops
  - These can be either self-reinforcing or self-correcting processes

An example of a simple causal loop diagram is illustrated in figure 8. This example represents the self-correcting process between changes in potential adopters and adoption rate of a given product, and the self-reinforcing process between change in adoption rate and number of adopters of the same product.



**Figure 8.** Example of a causal loop diagram (Wikipedia Commons, 2016).

The key assumption behind process maps such as causal loop diagrams is that events happen as a consequence of patterns of behavior (Sterman, 2000) and that rationality of human decision-making is bounded because human cognitive capabilities are overwhelmed by the complexity of the system (Mainzer, 2007) as the effects are often counter-intuitive (Sterman, 2000; Vennix, 1999).

In this study, the ultimate aim of using causal loop diagrams was to articulate the researchers' understanding of the dynamic, interconnected nature of the system behind the idea implementation framework, and thereby identify the key factors that differ between the participating firms. Thus, System Dynamics was used in a descriptive way, where all connections and causalities were assumed by the authors. The software [www.insightmaker.com](http://www.insightmaker.com) was used for illustrating the causal loop diagrams.

#### ***Survey***

Lastly, the survey was summarized and first used for clarification of certain aspects of the within-case analyses, especially for analyzing how responses differ between different hierarchical levels within each firm (an excerpt of survey data that was used can be found in Appendix 3.3). The findings were then compared across the three firms in order to draw conclusions on how the practices for idea implementation differs between the different hierarchical levels of different firms, and with special emphasis on the firms' middle management levels.

### **3.5 Methodology problems**

Qualitative research comprises data and input from multiple personnel possessing different perceptions and general assumptions (Easterby-Smith et al., 2012). It is difficult to produce one all-encompassing conclusion about the entire social world (Bryman & Bell, 2015). Therefore, due to the nature of qualitative research, a discussion of its validity and reliability is complicated but needs to be taken into consideration.

#### **3.5.1 Validity**

In management research, researchers intend to understand real world phenomena through relationships between different organizational constructs, which are unobservable theoretical variables, used to describe a phenomenon (Flynn et al., 1994). The validity of such research can be defined as the extent to which the research findings or indicators to understand a concept provide a true representation of the content which they are supposed to describe (Easterby-Smith et al., 2012). Therefore, validity is concerned with the integrity of results derived from a research. Validity can be broadly divided in two categories, namely, internal validity and external validity (Saunders et al., 2009).

#### ***Internal validity***

Internal validity deals mainly with the issue of causality between two or more variables (Bryman & Bell, 2015). The issue of causality arises when changes in the dependent variables are caused by the changes in independent variables. With respect to this study, the internal validity applied to firms' efforts to manage and stimulate innovation. Therefore it is important to verify that the issues identified with the firms were valid in order to find their causal relationships. The research included some observational data to back up the assumptions of causalities established during the qualitative interview. Due to the relatively large sample size at each of the participating firm's and the cross-departmental sample population, assumptions from earlier interview responses could be validated throughout the interviewing rounds.

The approach of using causal loop diagrams can enhance the understanding of the dynamics that our minds cannot intuitively perceive (Vennix, 1999), Sterman (2000) pointed out that a causal loop model will never be able to get it all, because all models are merely assumptions of reality and therefore in essence wrong. The use of causal loop diagrams for aiding and structuring one's mental models must be an iterative process, and the causal loop diagrams can therefore constantly be improved. It must therefore be recognized that the causal loop diagram used in this study is a mere representation of the researchers' mental models, and thus does not aim to represent the whole reality of the full complexity behind the concept of innovation capabilities with regard to idea implementation. It should also be noted that the causalities in the causal loop diagrams could have been further validated in order to minimize potentially wrong assumptions made by the authors and thus enhance the internal validity.

Another threat to the internal validity is the effect of history (Brown et al., 2004). This arises when specific events take place between two measurement variables where the observed effect might be due to an event that takes place between the pre-test and the post-test. The internal validity would increase by measuring both variables over the same timescale. Due to the short duration of this research, the historical significance of response might have been neglected thus leading to a bias.

#### ***External validity***

External validity deals with the generalizability of the results from the study beyond the specific research context (Bryman & Bell, 2015). In order to establish external validity, samples should be generated that are representative of a diverse population (Brown et al., 2004). This is considered to be the case for the framework for idea implementation illustrated through table 4, which draws from generalizable theory from existing research and thus should be applicable for various settings. However, as this study was conducted at firms involved in highly specialized trade in complex organizational matrixes, the external validity for the research is considered to be low. Although important insights were gained from each firm, these results have to be assimilated along with the firm's context thereby eliminating the possibility of generalization.

#### **3.5.2 Reliability**

Reliability refers to the possibility of another researcher at a later stage to be able to repeat the research with similar procedures and samples and finding the same results and conclusions (Yin, 2003). Thus, reliability is concerned with the consistency of the research results (Bryman & Bell, 2015).

Saunders et al. (2009) identified four threats to stability: subject or participant error, observer error and observer bias. The ability of external factors such as the timing of the interview or location affecting the outcome of research corresponds to subject bias. In this study interviewees were mainly selected based on the suggestions from a manager whom was the main contact point in each firm, which might have led to a participant bias. Subject bias may also have been caused by some interviewees responding based on what they perceive as favorable responses that their managers would want them to provide.

All interviewees participating in this study were professionals with tight schedules and varied geographic locations. Therefore, it was difficult to ensure same time or location or other external factors while conducting the interviews. However, all interviews were conducted during normal working hours and approximately the same amount of time was spent on each interview. All the participants were also informed of the anonymity of the study, and therefore the fear of superiors or higher managers accessing the responses is believed to have been eliminated among the participants. This limited the subject bias of the responses to a great extent.

Observer error occurs when the people conduct the interviews have different ways of asking the questions (Saunders et al., 2009). To address the observer error, both researchers were present during the interviews except for a few occasions; less than two percent of the interviews were conducted without the second researcher. In dealing with observer bias, each interview was recorded and transcribed by the researchers. The information from the transcribed document was depicted on post-its as showed in figure 7 and discussed amongst the researchers, and the information/insights on the post-its were carefully analyzed to reach a consensus.



Observer bias refers to the difference in interpretation between different researchers involved in a research (Saunders et al., 2009), and was in this case avoided through regular alignments and discussions between the two researchers. According to Bryman and Bell (2015), stability is another important factor to consider while assessing reliability of a research study. In order to ensure stability, it is important to measure the results over time to be confident that the responses of the interviewees do not fluctuate. During the research, some of the interviews were followed up by informal discussion to ensure the stability of their responses, and the researchers' assumptions.

# 4. Within-case analyses

*The following chapter outlines each within-case analysis, i.e. each firm participating in the comparative study. If nothing else stated, all information presented in this empirical analysis is collected from interviews with a minimum of employees at Ericsson's Packet Core, Volvo Cars and Hilti, as well as from questionnaire data. Thereby this chapter serves as a foundation for the cross-case analysis which will be presented in chapter five. The within-case analyses will follow the disposition of the framework for idea implementation presented in the end of chapter two, with the following building blocks: innovation strategy and vision, organizational structures, resources, culture and ways of working.*

## 4.1 Ericsson's Packet Core

Founded in 1876 and currently employing 118,000 people in more than 180 countries, Ericsson is today a world leader in the rapidly evolving telecom industry (Ericsson, 2015 A). More than one billion subscribers around the world rely on Ericsson's network with 40 percent of global mobile traffic running through its network (Ericsson, 2015 B). Along with an indomitable market position, Ericsson relishes on the industry's strongest intellectual property portfolio with more than 37,000 granted patents (Ericsson, 2015 C).

### ***The Information and Communication Technology industry***

Information and communication technologies (ICTs) are strong driving forces in reshaping economic growth (Ericsson, 2015 A). The industry is characterized by rapidly changing technology, evolving industry standards and frequent new product introductions (The World Bank, 2015). Citizens, businesses and public offices including governments work together to harness power of ICT in order to make services more efficient, drive economic development and strengthen social networks. More than 75 percent of people around the world have access to a mobile phone.

With rapid advancements, the new era of converging communication will bridge the gap between telephone, wireless communications, voice and written messages (The World Bank, 2015). This translates into immense competition among key actors in the industry. The competitive pressures could adversely affect prices (including pricing practices or pricing models) or demand for products and services.

### ***Ericsson in the ICT industry***

Ericsson operates along two dimensions, namely 1) legal entities comprising more than 200 business companies in more than 100 countries, and 2) operational units comprising seven group functions, three business units and twenty-three market units. The company's strategies, operations and resource allocations are coordinated via the group functions: Communication, Finance, Human Resources & Organization, Legal Affairs, Sales & Marketing, Strategy & Operational Excellence and Technology while the business and product strategies are defined by the business units which are responsible for profitable growth and consolidated results within their respective areas (Ericsson, 2015 D).

### ***Packet Core***

Ericsson has more than 300 operators in 140 countries relying on Ericsson's Packet Core solutions, a flat IP-based network architecture that simplifies network operation which reduces latency and improves scalability (Ericsson, n.d. A). The Evolved IP Network solution ensures that data traffic is carried in a reliable and predictable way between the Packet Core

nodes. The responsibility of Product Development Unit Packet Core (PDU Packet Core) unit is to provide profitable and competitive packet core network products and solutions in the mobile and wireline areas with a vision to be an undisputed leader in the packet core solution in a world with 50 billion connected devices (Ericsson, 2015 E). PDU Packet Core is mainly a product organization that is responsible to deliver, develop and maintain products and solutions according to roadmaps with agreed functionality, cost and time.

### 4.1.1 Innovation strategy and vision

During the interviews, Packet Core employees appeared not to be aware of a specific strategy for how to pursue innovation, neither within the PDU, nor within Ericsson Gothenburg site, and instead tended to highlight Ericsson's vision and some of the many recent initiatives for creativity that exist within the Gothenburg site as signs of the firm's innovative heritage and power. The formal innovation strategy was perceived as long term and visionary, often related to higher management statements, and focusing on the future technological areas that Ericsson is targeting. However, the members of the innovation team within PDU Packet Core talked about an innovation capability strategy which aims at building competence for fostering innovation. One result of this strategy is workshops that are conducted to train managers and ensure that they understand their roles and responsibilities with regard to innovation.

*“How do you develop an innovation strategy without making sure that you have the capabilities for executing it?” (Manager - Packet Core, 2015)*

More specifically, employees tended to point out Ericsson's shift into software subscription sales and how innovation is important in Ericsson's strategic direction into the future where cloud and virtualization are expected to play an important role. In general there was much focus on software and services, especially in areas such as IP Networks, Cloud, Operations Support Systems (OSS) & Business Support System (BSS), TV and media, and Industry and Society, as Ericsson's hardware business has slowly been phased out over the past years (Ericsson, 2015 E). Most interviewees brought up that they had noted that Ericsson's highest management in recent years had started to bring up innovation in their rhetoric, and appeared to have the perception that innovation is a highly relevant topic for the whole firm.

*“Ericsson is a big company and there is one aligned strategy to some extent but there are variations”. (Manager, Packet Core, 2015)*

The atmosphere with an apparent push for innovation from higher management appeared to have resulted in several initiatives within the Ericsson Gothenburg site, such as several innovation teams, hackathons to which employees from all departments regularly are invited, and, as mentioned, trainings for building so called muscles for innovation. However, Packet Core employees appeared not to be aware of ongoing initiatives in other departments than their own.

Within PDU Packet Core there is an official process, called the idea box, for employees to hand in ideas in order to receive proper support and feedback for driving it further. However, only a few of the interviewees describing this process could elaborate on its process steps, what stakeholders that are involved, or what happens after the so called experimentation week which is received through the idea box where the ideas with potential are evaluated. The interviewees did mention, however, that ideas in the PDU most often are assessed based on business cases and return on investment.

### 4.1.2 Organizational structures

As mentioned in the previous section, Ericsson is a large organization divided into four business units and several group functions. The business units consist of Radio, Cloud & IP, Global Services and Support Solutions (Ericsson, 2015 D). Among these business units, BURA and BUCI consist of several product areas and design units. Product development unit Packet Core is located under the Development Unit Network Functions & Cloud in the Business unit Cloud and IP (see figure 9). This creates a complex interplay between several business units and higher management.

Several of the interviewees mentioned that the organization is structured in a waterfall model where decision making flows from the top to the bottom. There is a product management looking at proven and existing product lines whereas R&D looks into more long term research. Interviewees said that it is difficult to move forward with grass root initiatives without top management support. However, so called skunk works, or unofficial initiatives, were described to be a suitable possibility and many interviewees had either heard of or knew that unofficial initiatives do regularly take place within the Gothenburg site.

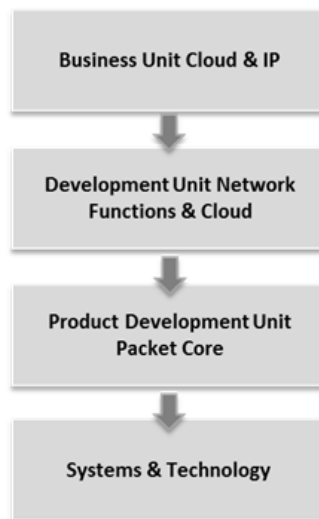


Figure 9. Organizational structure related to PDU Packet Core.

Most interviewees were not aware of any structures to work with ideas across multiple business units. This was often seen as an obstacle for radical innovation that may require involvement of several business units. If an idea involves working across business units, most interviewees could not mention the decision maker whom they had to approach and they did not mention any structures to scan for ideas across multiple departments or business units.

Similar to several other PDUs within the Gothenburg site, PDU Packet Core has an innovation team with the task of fostering the PDU's innovative capabilities through the development of for example management innovation trainings and hackathons. During the interviews this team was, however, described as rather disconnected from corresponding teams of other PDUs in the Gothenburg site.

### 4.1.3 Resources

At Packet Core, all products have a product owner who holds the budget for the respective product. In order to get resources for a creative idea such as funding or time, the product managers therefore need to get on board with the idea. For these reasons interviewees many times appeared to find it difficult to get slack resources to experiment with radical ideas. Employees within Packet Core rarely get the opportunity to collaborate with externals such as

customers or start-ups. Instead, information about competition and customer expectations are usually communicated through business intelligence units or other such market related units. Both product managers and employees described this as a factor that hinders the development of a proper business case in the initial phases of the development of a creative idea.

*“When you work for Ericsson, the customer is so far away. You do not always understand who you are developing for.”* (Manager - Packet Core, 2015).

The innovation team was perceived as an important resource that trains managers at PDU Packet Core through workshops and special events. Although this team by many was believed to lack formal authority or budget, interviewees who have participated in their training found it useful in understanding innovation and how to handle ideas within their teams. During the interviews, managers tended to refer to the learnings from the training when discussing the importance of innovation, and potential methods for encouraging their employees to be creative. Also, the idea box was sometimes referred to as a resource for submitting ideas that cannot be assessed using the normal work processes. In the idea box, idea providers get an experimentation week to work with idea after which the idea is further assessed to move it into further rounds.

As mentioned however, most interviewees were not clear about the entire process involved with idea box initiative. Also, there appeared to be little transparency on how ideas are assessed within the idea box, and information about who takes part in the idea box meeting is not widely shared.

*“I have little faith in an idea box where everyone puts their ideas”.* (Manager - Packet Core, 2015).

The interviewees gave mixed responses when questioned about site level initiatives such as hackathons. Some thought of hackathons as good places for networking and collaboration across business units whereas others believed that hackathons do not account to much as long as there is no follow up mechanism. After the hackathons, there are seldom processes put in place to use the ideas or to share information about the ideas, which several interviewees pointed out as a concern.

### **4.1.4 Culture**

All interviewees could relate to Ericsson’s innovative heritage, emphasizing that innovation in later years had become increasingly used as a term and asked for by management. Although managers, most of them of whom had attended the innovation trainings, elaborated on the many shapes of innovation when discussing the topic, more operational employees appeared to be less confident on the topic area of innovation. Rather, such employees tended to regard innovation as something groundbreaking, and not as incremental improvements. One software developer explained that he is paid to perform improvements, and that he therefore does not regard this as innovation. Still, interviewees within PDU Packet Core could not recall many examples of disruptive innovations having been produced by their product development unit. When asked for success stories related to the idea box setup, almost none of the interviewees could recall such a story.

#### ***Low trust in formal structures and processes***

As mentioned, interviewees thought that the ideas submitted through the formal channels such as idea boxes were rarely executed. In fact, it appeared as there is a considerable amount

of distrust and skepticism towards the formal processes for pushing ideas within Packet Core. When asked about innovation and Ericsson's vision and strategies towards innovation, it was evident that the managers had a better understanding of their role in Ericsson's innovative aims when compared to lower level employees. Managers often stated that it is perfectly alright to take risks while employees tended to think that management is risk averse and not willing to experimenting with radical ideas. This may have been reflected into the fact that a majority of the interviewees believed that ideas should be shown only when a proper business case could be displayed. Before this, several interviewees mentioned that they would rather work secretly, or 'under the table' as they often said, with their ideas, meaning that they would keep potential ideas a secret from their management during a potential ideation phase.

When it comes to motivating employees, interviewees tended to believe that there are little incentives or rewards for recognizing individual contributions towards innovation. When asked about failures, interviewees expressed that there is no punishment for failures but at the same time, they also pointed out that failures are not shared openly.

*"We are not a punishment company. But, failures could be shared better".* (Manager - PDU Packet Core, Ericsson 2015).

### **4.1.5 Ways of working**

At Ericsson's Lindholmen site, there are various site level initiatives to boost innovation and creativity among employees, such as Hackathons and other collaboration activities, mostly driven by unofficial, enthusiastic teams and individuals, with or without management support. However, when asked about whether there is any central team or structure for creative collaboration, all of the interviewees believed that there is no such structure accessible for them. One manager mentioned a meeting that occurs regularly in Ericsson's headquarters in Stockholm and which is open for idea providers also from the Gothenburg site. However, none of the rest of the interviewees did not mention this meeting.

Interviewees often mentioned that products at Packet Core have a product owner who holds the budget for their respective product. The product managers allocates the budget to the PDUs based on the needs and requirements from the customers. The product manager was several times described as the ultimate decision maker for both radical and incremental ideas. Most ideas that reach the decision makers such as product managers are assessed based on business cases. However, although business case and market potential for an idea are described as quintessential for moving forward with ideas, the Packet Core interviewees could not mention a formal process for communicating externally with customers.

### ***Local initiatives to build innovation capabilities***

In Packet Core, there are several workshops and trainings conducted to train managers towards building innovation capabilities within the PDU. Most interviewees mentioned that skunk works can be undertaken in the organization and there are several grass root initiatives to move forward with ideas. However, employees engaged in these grass root initiatives mentioned that it is often difficult to get support for such site level initiatives.

### ***The idea box initiative***

In order to support employees who come up with ideas, the Packet Core Unit has an idea box where employees could submit ideas to get support in the form of resources such as money, expertise and time to improve the ideas. The stakeholders of the idea box initiative meet every Wednesday to discuss the ideas and take decisions. If an idea has potential, the idea provider

is given an experimentation week to work on the idea and improve it further. After the experimentation week, the idea would in theory move into round two and round three of the idea box process.

*“In theory, it, after round one, would imply that we had new filtering, something like giving a second round, third round etc. after experimentation week. In practice it never worked, we could agree on giving second round but we did not have any means to actually form a project around it”.* (Manager - PDU Packet Core, Ericsson 2015).

However, most interviewees could not describe the later stages of the idea box process since there were very few practical examples of ideas that went through all the stages. On the other hand, one manager who participated in an interview stated that many of the ideas submitted are low-level, meaning that they are based on existing features or products. Managers most often assessed radical ideas based on the business case, and tended to point out that the idea providers' frequent lack of customer understanding tends to hinder them in developing good business cases. But, it has to be noted that managers usually expect only a simple business case from the idea providers and there were several support systems put in place to support idea providers in developing business cases.

The Innova process was a formal way of handling ideas that used to exist before the organizational reshuffling a couple of years back. However, many interviewees still identified the idea box with the Innova process and used the term 'Innova' to explain the idea box structure. Some interviewees believed that the Innova process is still functional whereas a few others were unsure of whether the process still existed or not. Some interviewees said that the Innova process is too slow and does not have a budget on its own. Thus, there appeared to exist some confusion on whether Innova is a complete process or an idea box.

### 4.2 Volvo Cars

Based in Gothenburg, Sweden, Volvo Car Group (here referred to as Volvo Cars) is a relatively small player in the global automobile industry (Volvo Cars, n.d. A). Volvo cars are sold in more than 100 countries by regional market companies and national sales companies (Volvo Cars, n.d. B). The firm's official vision is to be the world's most progressive and desired premium car brand by making life less complicated for people, while strengthening the commitment to safety, quality and the environment (Volvo Cars, n.d. A). Examples of innovations produced by the firm through history are the three point safety belt in 1959, the rearward-facing child safety seat in 1972 and the roll-over protection system in 2002 (Volvo Cars, n.d. D).

In recent times Volvo Cars has started exploring partnerships and new business models (Volvo Cars, 2016). For example, in November 2015, Volvo and Microsoft announced their collaboration with the first automotive application of HoloLens technology which can be used to redefine how customers combine the real and digital world. Volvo Cars is also a leading actor in the development of self-driving cars (Zolfagharifard, 2016) and was the first firm to accept full liability if their self-driving models crash in autonomous mode.

#### ***The automobile industry***

The automobile industry has been growing at a strong pace since its revival post the financial meltdown in 2008 (Forbes, 2014). Sales of light and heavy-duty vehicles have in the latest years been up driven by renewed consumer confidence in the economy and higher spending.

For almost a century, the industry has been organized around a dominant design based on three main components: combustion engine, steel body and mechanical powertrain (Börjesson & Elmquist, 2011). This dominant design is reinforced by refinements to engineering skills, networks of actors and the infrastructures supporting the development of incremental innovations within the boundaries of the internal combustion engine. Gao et al. (2014) argue that the industry is now likely to be facing an era of transformative change as the automobile, mechanical to its soul, is competing in a digital world, which in turn is demanding new expertise and attracting competitors from outside the industry. As value chains currently seem to be shifting and data is eclipsing horsepower, the industry's basic business model is likely to be transformed in the years to come.

### ***Volvo Cars in the automobile industry***

Volvo Cars has been under the ownership of the Zhejiang Geely Holding (Geely Holding) of China since 2010 (Volvo Cars, 2013). Before this, Volvo Cars formed part of the Swedish Volvo Group until 1999, when it was bought by Ford Motor Company.

The latest annual report reveals that the company seems to be on the right way towards its vision of global expansion, with the order book of the new XC90 exceeding expectations, and ongoing plans for building the first US manufacturing facility in South Carolina (Volvo Cars, 2015 B). However, pressure for change have in recent years come both from customers and competition (Tannou & Westerman, 2012). Rather than selling transportation solutions, vehicle manufacturers are increasingly focusing on providing transportation experiences in the form of services. These trends are directly mirrored in Volvo Cars' business strategy; the firm has under the past years been undertaking a transformation in its business model leveraging four digital technologies: mobility, social media, analytics and smart embedded devices. The intent is to develop a more direct relationship with the end-customer without disrupting the relationship the dealers have with their customers.

#### **4.2.1 Innovation strategy and vision**

Volvo Cars announced a new market strategy in 2014 called 'Volvo Way to Market' where the firm would focus on four areas namely: marketing tools, digital leaderships and service (Volvo Cars B, 2014). In recent times, the firm has announced its strategies towards digital technology and electrified vehicles focusing on three key elements: digital commerce, an industry-leading configurator and an industry-leading website (Volvo Cars B, 2014). In addition to Volvo Cars' digital strategy, the Volvo personal service is the final part of the 'Volvo Way to Market' where the firm endeavors to facilitate a personal service technician for each and every Volvo customer. It is expected that by 2018, all Volvo dealerships around the globe will be offering this service as a standard. Furthermore, Volvo Cars has announced a comprehensive electrification strategy where plug-in hybrids would be introduced across the entire product range. Along with hybrid vehicles, Volvo Cars would launch a new range of electrified cars and fully electric car by 2019.

#### ***Perception of Volvo Cars' strategy at an operational level***

In spite what was perceived as a clear and coherent strategy towards future vision published through the official web pages and through the corporate structures and setups, the interviews revealed what appeared to be some gaps in strategic purpose in various initiatives undertaken by the higher management. Although there was a vision towards future product areas, connectivity and other domains, most of the interviewees could not relate to a focused strategy for producing innovation. One interviewee mentioned that innovation strategies exist in each department but that these differ from one another. Also, when asked about the setup



called the Innovation Management Forum or its constituents, the interviewees tended either not to be aware of the setup or its participants, or replied in a relatively inconsistent manner, indicating that the awareness of official, cross-organizational setups is lacking.

When asked about Volvo Cars' innovation strategy one interviewee said the following:

*“I don't think that the company is consistent with its innovation strategy. People do not understand the full picture and therefore you will meet a lot of people who are struggling in the innovation corner.”* (Volvo Cars interviewee, 2015).

Unlike other two large firms in the study, Volvo Cars is not aligned under multiple business units. Rather, the different departments are organized as silos that operate independently of each other when it comes to novelty that is not included in the regular product development processes. Thus, one could argue that the high degree of variations in employees' view on Volvo's innovation strategy may be due to rigid functional units with, in relation to creative ideas, limited cross-department communication and collaboration.

### 4.2.2 Organizational structure

Interviewees tended to point out that each of Volvo Cars' functional department functions as an independent unit carrying out tasks with, in some situations, limited collaboration with other units. There is a management team that is positioned above the functional units and each functional unit/department is aligned under a department manager.

The various departments of the organization are (Volvo Cars A, 2015 ):

1. Product Strategy and Vehicle Line Management (PS & VLM )
2. Design
3. Market, sales and services, Research and development (MSS)
4. Research & Development
5. Purchasing
6. Manufacturing
7. Corporate Communication
8. Marketing, Sales & Customer Service (MSS)
9. Information Technology (IT)
10. Quality & Customer Satisfaction
11. Finance
12. Legal
13. Intellectual property

### *A cross-organizational Corporate Innovation Setup for collecting, maturing and diffusing ideas*

When it comes to innovation management within Volvo Cars, there is a Corporate Innovation Setup which runs a network (The Innovation Network), a process, a management team (Innovation Management Forum) and an office of people to support those two prior (see figure 10).

The cross-organizational network is called the 'Innovation Network'. It has the task to handle ideas that do not fall within the normative tasks of the different departments by providing a place for employees to take the ones of their ideas that do not fit within the daily routines. These ideas are scouted for by the Innovation Network. The network consists of a team of experienced, high level managers authorized to review and take ideas from the organization

## 4. Within-case analyses

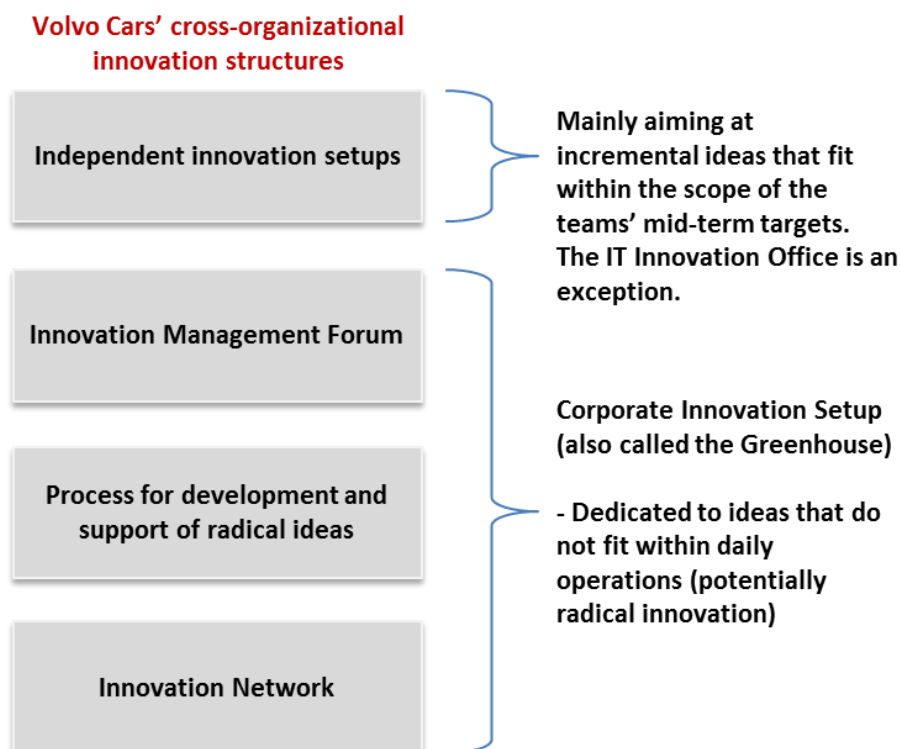
and incubate in the Corporate Innovation Setup until a department or stakeholder is willing to take over the idea and develop it further. Idea providers are either expected to proactively approach the network with ideas, or ideas are scouted for by the people working there, either through innovation competitions, which occur regularly, or through the Innovation Management Forum for discussion of creative ideas and initiatives. The Innovation Network is further not a decision making body; it sends ideas back and forth between the organization and the corporate innovation process.

The Corporate Innovation Setup, also called the Greenhouse, takes care of ideas that are considered to fall under the following categories: radical ideas, ideas with potential to become business model innovations, ideas that require cross-functional collaboration and ideas that are stuck in the organization without someone championing for them.

### *Independent setups for supporting and fostering innovation*

In addition, several of Volvo Cars' departments have independent setups for supporting and fostering innovation, mainly pursuing incremental ideas within the mid-term targets of their departments. Most interviewees referred to these when discussing existing structures for driving ideas, rather than the two cross-organizational structures mentioned previously.

Another cross-organizational setup for supporting idea implementation within Volvo Cars is the IT Innovation Office. It is a team which is part of a local structure, focusing on digital innovations, both incremental and radical, and who otherwise work similar to how the Corporate Innovation set up does. As represented in figure 10, this is a another team that takes care of radical ideas that do not fit into the traditional organization, within certain focus areas such as Health, Retail and Commute. The IT Innovation Office works on ideas from early phase of ideation to testing and prototyping with focus on understanding customer value. The team is given the space and authority, through senior management support, for experimenting with ideas in order to learn from trials and experimentation.



**Figure 10.** Structures for idea implementation at Volvo Cars.

### 4.2.3 Resources

When discussing resources for driving ideas, most interviewees highlighted that lack of time was the most common constraint for idea implementation within Volvo Cars. When segregating resources into tangibles and intangibles, it was found out that tangible resources such as funding, tools or work equipment are most often not perceived as a constraint. For example, the IT innovation office has its own budget to experiment with ideas and thus there is little constraint on the financial resources within the team. In other departments within the organization it was evident that anchoring is key for getting resources for getting support for driving creative ideas further.

Another typical constraint mentioned for receiving resources for driving ideas was mentioned as the firm's existing product line, i.e. cars. For example, one employee elaborated about his efforts to set up a lean and agile team to handle radical ideas but he soon realized, as he expressed it, that everything that is built has to be featured inside a car.

*“If ideas are really expensive or tricky then they are the first ones to be removed, because you have a time for the car to be out on the street and you work backwards. It takes a lot of time.”* (Volvo Cars interviewee, 2015).

Thus, at some point or the other, the ideas or innovations need to enter the traditional organization. Here the interviewees perceived that they would typically face a headwind. Finance board and product board were considered to be the decision makers when it comes to accessing extra resources and as quoted above delivery schedules and budget constraints sometimes prevent ideas from being implemented. Also, the vehicle binder was identified to be an important resource as it contains all the information regarding the various car models that Volvo produces. This can be identified as an all-encompassing resource of product know-how.

The Innovation Management Forum was mentioned as being actively involved in helping idea providers identify new possibilities to obtain resources for their ideas. Radical ideas that are incubated in the Greenhouse get support until someone from the organization claims or volunteers to take over the idea and implement it within their department. However, even though there is always room for improving resource availability through such special units and competence hubs, employees often mentioned alternative or informal ways as the preference ways for accessing or utilizing resources.

### 4.2.4 Culture

Innovation is carried out locally at every functional unit in the organization. At the same time, several interviewees indicated a lack of knowledge in the global processes towards handling innovation, and perceived that there is limited information or knowledge sharing with regard to potentially radical novelty between the firm's different departments. One interviewee described the organizational silos as walls that have become thicker and bigger over the years as employees and that managers may have become entrenched within a department with little empathy towards activities taking place in the other areas of the organization.

Volvo Cars' corporate culture appeared to be deeply rooted in the daily processes and work norms where it is difficult for employees to step aside from routine activities to spend time on creative projects. However, it was also highlighted that until recently, the performance was only measured based on bottom line profit but that in recent times there had been an internal push towards innovation and brand building and also focus on processes towards innovation.

## 4. Within-case analyses

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Teams such as the IT innovation office and the connectivity department have dedicated personnel to work with novel ideas. When asked about how idea implementation in IT innovation office is different from the rest of the organization, one interviewee said:

*“We do rather than talk. We develop and test. And suddenly people will start talking.”*  
(Employee at IT Innovation Office, 2015).

But despite the fact that a cross-organizational innovation team such as the IT Innovation Office believes that idea implementation should happen through a socio-political process where support and resources are gathered through convincing about and selling in ideas, several employees perceived that ideas implemented through unofficial channels are not always appreciated by management. One employee said:

*“I have almost been thrown out for doing things under the table.”* (Volvo Cars interviewee, 2015).

Although many interviewees stressed the risk of stepping on people’s toes when driving ideas and initiatives, attitudes towards taking risks were also noted. A couple of interviewees mentioned that they would rather quit than let management bring them down, and in general no interviewee expressed a fear of failing with their ideas. However, some interviewees expressed a frustration in what they believed are complicated decision making processes, lack of support for creative ideas, and meetings without outcomes.

### ***Communication***

During the interviews, several employees mentioned the need to be careful to not step on people’s toes, in particular people from departments other than one’s own. However, an employee from the IT innovation office said that no one would oppose an employee taking an idea to the Greenhouse. At the same time some interviewees believed that management does not appreciate employees spending too much time with the Greenhouse.

The organizational silos isolate resources and skills from adjacent departments. Interviewees believed that there is very little communication between the organization’s departments in relation to creativity, both formally and informally. Most interviewees believed that employees are trained to do routine activities churning out physical products in large scale without the push for creativity or collaboration between functional departments.

### ***Motivation***

At Volvo Cars, patents fetch a cash reward for the innovator. However, some employees felt that the same monetary reward for all types of patents is a flawed system.

*“If an idea is patented, you get few thousand kroner. It is frustrating to see your idea on forums and discussions and your name just mentioned as a honorary thing”.* (Volvo Cars interviewee, 2015).

Apart from monetary rewards for patents, different forms of creativity or innovation is typically recognized by way of informal acknowledgement and appreciation.

### ***Decision making and failures***

When dealing with failures, most interviewees tended to believe that there is no fear of failure within the firm. However, the interviewees also tended to point out that the firm's mindset very much focuses on testing all project carefully before launch as failures in a capital intensive automobile industry is considered as fatal. Also, failures are often taken up and discussed in different meetings and forums, for example in a cross-organizational innovation forum.

There was a perception among interviewees that decisions making processes are often taken by higher management with little or no consensus with employees or line managers. This is to some extent indicated in the composition of the Innovation Management Forum, which mostly consists of higher managers. A few interviewees believed that managers are risk averse as they mentioned that radical innovation may be hindered by risk averse line managers.

*“If we would have done the same thing as Tesla was doing we would not get the same result. Because our customers are not the cult following people, and part of the problem with radical innovation is that there is a lot of risk and a lot of failures.”* (Volvo Cars Manager, 2015).

But, some managers expressed that they keep the ideas until the bitter end to see if they can implement them into the product. Managers also tended to say that if believed in an idea and there is confidence that it can be implemented in the next product release, the idea is not considered a waste of time.

### 4.2.5 Ways of working

At Volvo Cars, ideas are often handled internally within a department as long as they fall within the existing operations or normative product iteration process. The real problem with idea implementation appear to surface when the ideas are radical or disruptive in nature. Due to reasons such as lack of knowledge on how and where to gain resources such as management support, time, competence etc. employees may struggle to get support for radical ideas . It was also evident that the formal setups for creativity and innovation (described in 4.2.2) are poorly known, or poorly trusted, among many employees involved with product development.

However, interviewees pointed out the organization's welcoming of creativity, and that especially incremental ideas tends to be appreciated. Although employees appeared to be aware of the local setups for enabling idea implementation of such ideas through formal processes and review boards, the existing setups were described as somewhat rigid and slow and therefore unofficial channels, for example informal networking, appeared to be preferred for driving ideas related to incremental innovations.

As mentioned, during the time of this study Volvo Cars had a cross-organizational Corporate Innovation Setup, supported by higher management, to take care of radical ideas, which work together with independent setups and processes for supporting creativity within the frames of the mid-term targets of their departments (see 4.2.2). Apart from these pan organizational setups, several departments have their own independent organizations and structures for handling creative ideas. For example, interviews conducted with departments such as Body and Trim, Product Strategy and Vehicle Line Management exposed the presence of internal processes put in place to handle ideas that fit within the tasks of the respective departments.

### ***Transparency and perceptions through the hierarchy***

In spite of the dedicated processes put in place to handle ideas, numerous interviewees raised concerns about the lack of transparency with the ownership of ideas. Some of them felt that the processes are rigid and often resulted in ideas being dormant for several months with progress. Several interviewees were even unaware of the procedures and ways in which the different cross-organizational setups can be approached, while management tended to know much more. These interview excerpts illustrate the mismatch between higher management perceptions and the realities on the operation levels within Volvo Cars' research and development departments.

### 4.3 Hilti

Founded in 1941 (Hilti, n.d. A), Liechtenstein-based Hilti Group serves professional customers of power tools and fastening and protection systems (Michel, 2013). Today Hilti is active in more than 120 countries, and is involved in several international technology partnerships. Since 2000, the Martin Hilti Family Trust holds all shares and, since January 2008, all participation certificates of Hilti Corporation (Kolouchova, 2013).

The firm's corporate strategy, named Champion 2020, aims at sustainable value creation through market leadership and differentiation, with market leadership referring to the firm's relative market share, and differentiation being achieved by outstanding products, services and software (Hilti, n.d. B). With respect to the strategy, four fields of action are defined: clear differentiation of products and services versus its competitors, direct and trust-based customer relationships, operational excellence and a high-performing global Hilti team. Since its founding in 1941, Hilti has produced several innovations (Hilti, n.d. C). In the 1980's, the firm introduced the first chisel hammer, in the 2000's the first electric drilling system for mining, and in 2013 the firm introduced the first Hilti cordless combihammer. Hilti provides a service-based offer against a subscription fee (Silmane & Chaney, 2014). This concept, called Fleet Management, was launched in 2001; its nature and impact was relatively revolutionary in the power-tool industry at the time (Michel, 2013).

### ***The construction industry***

Hilti's main industry is the construction industry (Michel, 2013). Innovation within the construction industry encompasses a wide range of participants (Blayse & Manley, 2004; Barlow, 2000), among others: governments, building materials suppliers, designers, contractors, labor workforces, owners, professional associations, private capital providers, end users, vendors and distributors, testing services companies and certification bodies (Blayse & Manley, 2004).

In the construction industry relationships have an important influence on innovation (Dubois & Gadde, 2002; Seaden & Manseau, 2001). Customers can for example identify novel requirements to be supplied by developers and suppliers (Seaden & Manseau, 2001), exert pressure on project participants to improve buildings' lifecycle performance and project flexibility (Gann and Salter, 2000), and in general demand higher standards of work (Barlow, 2000). Manufacturing firms are also key sources for construction innovation, because they often provide innovative components and building products, and tend to operate in more stable and standardized markets than do contractors and consultants (Anderson & Manseau, 1999).

### ***Hilti in the construction industry***

Through its numerous customer interactions, Hilti is able to learn from its customers how they use the equipment (Slimane & Chaney, 2014). As the relationship develops, Hilti can thus provide them with better, innovative services. While some of Hilti's competitors, like Black & Decker and Bosch, also serve the consumer market, Hilti strictly focuses on the professional customers that are willing to pay a premium price (de Wit & Meyer, 20015). The company pursues in-house R&D on technologies that cover the whole spectrum, from low to high-tech (Sandmeier, 2008).

### 4.3.1 Innovation strategy and vision

When asked about Hilti's strategy for innovation, a large majority of the Hilti interviewees referred to Hilti's corporate strategy, the Champion 2020. At the same time a large fraction of the interviewees pointed out that the corporate strategy focuses on differentiation and consider innovation to be a key driver for differentiation. There is a bottom up approach where Hilti looks at innovation in a broad sense and is not just limited to technology but also product, service, process, business model innovations etc. in terms of what can be used for reaching differentiation. A large majority of the interviewees agreed on that fact that the firm's vision is, more or less, radical. However, an awareness of need for a shift in focus from products towards ecosystems, i.e. through platforms for software thinking, and joint ventures, was noted.

Each business unit has its own strategy when it comes to innovation. Several business units attempts to manage ideas and creativity, for example through initiatives such as Kanban boards, and management of old ideas. However, a common view was that Corporate Research and Technology (CR&T) is more directly concerned with management of ideas and creativity than the business units.

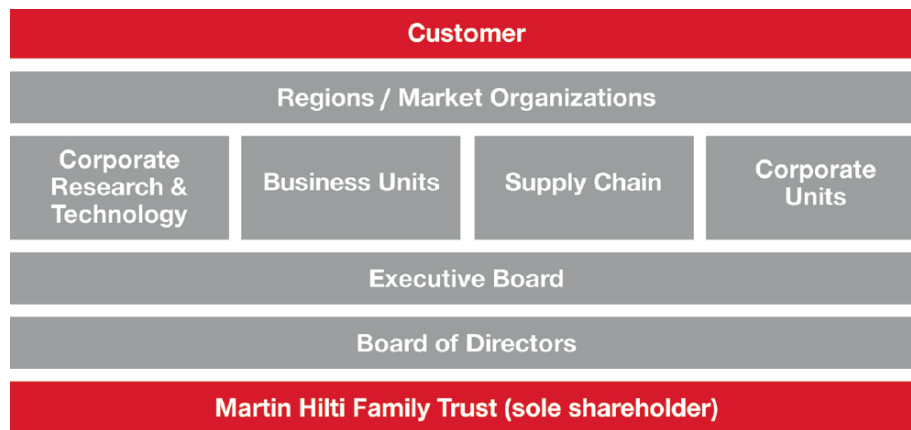
*“We have a differentiation strategy rather than innovation strategy. Maybe there is an innovation strategy in CR&T. CR&T are looking into the technologies of the next 10-20 years. BUs look into the possible differentiation of the next 5-10 years.”* (Product Manager, 2015).

Just like for the rest of the organization, it is the Champion 2020 that guides the roadmaps of CR&T.

### 4.3.2 Organizational structure

Hilti employees would often say that the firm has a flat organizational structure. One project manager mentioned that management with mandate to make high-risk decisions is always maximum two hierarchies away, and that most Hilti employees working within research or development are in contact with this type of management regularly, for example in the different project steering meetings. The same interviewee pointed out that, because of a culture of pre-readings before such meetings, there is a high predictability of how managers will react when approached with different initiatives. Another advantage of the flat structure was mentioned as the potential for recognition for ordinary employees. As there are maximum six levels of hierarchy for the whole company, and three levels within each business unit, ideas and initiatives will quickly get the attention of the higher management. However, it was also mentioned that the attention of higher management in a meeting may discourage people with ideas but no skills to present ideas.

Figure 11 provides an overview of Hilti's group organization. This study includes interviewees from business units as well as from Corporate Research and Technology.



**Figure 11.** Hilti group organization (Hilti, n.d. A).

### ***Independent business units***

A common view was that the business units function as separate firms, with each business unit having its own budgets, steering setup and even organizational culture. The fact that collaboration across business unit boundaries is rare, was sometimes believed to result in double initiatives, due to knowledge getting lost when it could in fact have been shared. This was pointed out as being a potential problem for so called ‘major or stepchange innovation’.

Although corporate processes exist that should be valid for the full company, there are big differences in how these are handled within different business units. Also, depending on the maturity level of the different business units’ technologies, the ways of working, the culture, and even the level of innovativeness, differ between business units:

*“I would say that we work on different fields of activities within the company. This is mainly driven by acquisitions of other companies, together with an internal push for ideas by giving them specific structures for developing things that can be pushed into the BU. We can also create new BUs. But this happens from a higher strategic level.”*  
(Head of Development, 2015).

A certain degree of competition between the business units exists for getting attention from the market organizations and keeping their interest alive. For example, representatives from the market organizations visit the business units at regular intervals, for example in workshops etc. It was mentioned that often contact with a market organization is used to display the latest technology.

### ***The key role of Corporate Research and Technology for innovation***

In relation to discussions on innovation and creativity at Hilti, the matrix organization Corporate Research and Technology (CR&T) was frequently mentioned. Within CR&T there is an innovation management team which does drive innovation with focus on service innovations, but has a strategic role in governing the structures and the processes enabling researchers to be innovative and to innovate.

Several interviewees described a two sided approach in development of new products, one from CR&T that is based on technology push and one from development within the business units that is based on market pull. CR&T is described as being independent from the business units, allowing them to monitor new technologies themselves and gaining their own perspectives on the market. In the interviews it was also brought up that research at Hilti does



not always differ between problems and needs, whereas the business units, where ideas become related to a product, are more need oriented.

### 4.3.3 Resources

At Hilti, there is a yearly roadmapping session where allocation of resources and support for different ideas and initiatives is planned. Here a large group of managers attend - senior management, middle management as well as other related people - in platform for discussions and display of ideas, followed by workshops. A common perception by the interviewees was that the ideas that are long term oriented can be displayed at this session, as this increases the odds for getting middle management support. For ideas that have more near term opportunities, it is not considered suitable to wait until the roadmapping session. However, once again the interviewees were pressing on focus and relevance; ideas must have business impact and be relevant for the the customers. If this is not the case, management support will most likely not be given, regardless of forum.

*“If an idea gets into the roadmap, then there are resources. Otherwise it does not get into the roadmap.”* (Group Manager Product Development, 2015).

Several interviewees, in particular from CR&T, pointed out that if an idea is good, the resources for pursuing the ideas is in general not a problem. In such a case, funding is either taken from the budget or the head of CR&T discusses directly with his boss. They also mentioned that it is not uncommon that CR&T and business units discuss who has the best competencies to take on a specific project, and distribute responsibility for projects thereby.

### *Time for experimentation primarily within Corporate Research and Technology*

Most interviewees perceive as there being a clear priority for running projects, and that it is instead up to the individual to create time for one's own ideas. Although managers within some business units stated that employees are encouraged to take the time for working on their own initiatives, many interviewees stated that there is no time for experimentation within the product development process. Instead, experimentation with regard to technology development is perceived to primarily exist within CR&T.

### 4.3.4 Culture

Hilti employees tended to consider ideas that fit within the products/daily processes are a part of the daily work, and should therefore rather be referred to as development ideas than innovation ideas. Real innovations were most often defined as bigger projects, sometimes described as something that changes the process steps for the customer and their applications. The commercialization step as a part of the innovation process was often stressed in discussions on definitions of innovation. Further, several interviewees mentioned that innovation within Hilti was very much focused on product innovation in the past.

### *Innovation as an outcome*

Many interviewees agreed on there not being a pronounced push towards innovation within Hilti. Rather innovation is described as an outcome of the organization's internal dynamics, where for example recruiting is mentioned as an important part. Here, people who are willing to reflect and question what they are doing are sought for. Another example is Hilti's policy of encouraging employees to rotate job positions approximately every fifth year, leading to high knowledge spread and dynamic collaboration forms. Processes that allow the employees to reflect and think are mentioned as another puzzle piece resulting in innovative outcomes.

## 4. Within-case analyses

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Several interviewees mentioned that they in later time had noted a push towards entrepreneurship, and stressed the importance of going all the way with ideas to ensure that they do not stay just idea.

*“It is not so much about me being crazily creative, but being structured, knowing the application, understanding the customer wants and needs, and then to drive that. I have to convince the different management levels.”* (Product Manager, 2015).

### ***Cultural differences between departments***

Most interviewees described their management a highly competent in judging ideas, but at the same time they stressed the importance of preparation, groundwork and support gathering, before decision-making meetings where ideas are presented to higher management.

Creativity within CR&T was described as steered while development is closer to the market and thus have higher time pressure. At the same time, CR&T was perceived as having much freedom and flexibility to act creatively. Here, the organization aims at ten percent of the employees' time to be creative. Although employees working within the business units were described as creative in their problem solution work, work within the business units was perceived to be more execution oriented.

### ***Acceptance of failure***

When asked about attitudes towards failure, a product manager mentioned that the only time employees get criticism is when they do nothing to support and pull through their ideas. This belief was strengthened by most interviewees.

*“The ideas are assessed for all risks before being implemented. So, the chances of failure are less. We have no fear of failure.”* (Group Manager Development, 2015).

Similarly, an employee within CR&T mentioned that failure is a lack of trying out alternatives that competitors later will pursue, rather than failing with implementing ideas.

### ***Motivation and encouragement***

There are two types of official rewards at Hilti, patent rewards and the yearly Martin Hilti Innovation Price. All people who are a part in a team producing a patent get a monetary reward, and depending on value of the patent they get additional funding. The Martin Hilti Innovation Price is described as a symbolic meeting involving top management where people can show what they have been doing in their work. The reward is money and a team event but the main reward is considered to be the company-wide appreciation. In addition, most interviewees mentioned that there are informal rewards, which motivates them more than the formal ones. In CR&T, such an award was mentioned as building your reputation as an innovator. A project manager mentioned that if your idea makes it through and becomes a product, the people involved will be recognized.

In CR&T, individual performance in relation to innovation is assessed through the employees' performance management goals where there are often target goals with respect to innovation. Within the business units however, performance is most often not based on direct performance in relation to innovative outcomes.

### 4.3.5 Ways of working

Within Hilti, there is no corporate wide, structured platform for the people within business units to send in ideas for evaluation, although some business units are pursuing initiatives such as idea boxes. Hilti interviewees often referred to Hilti's standardized processes in relation to innovation endeavors. The processes were often described as highly flexible as deliverables can be skipped as long there is support to do so in the projects' steering meetings.

On the other hand, several interviewees argued that the processes are, as a cultural result, in fact rather rigid, and that creativity mainly is expected to take place within CR&T. Within the business units, there are regular project steering meetings. Many interviewees perceived that there is no room for ideas or creativity here. Idea management within CR&T is handled through a so called ideation process. Here, ideas are queued for maximum 12 weeks before a decision has to be taken. The target to bring idea to maturity in order to be able to take a decision on whether to make a research project or a transfer to a business unit or to archive it. In the ideation process the levels of ambiguity tolerance were described high as long as the ideas are related to the core business areas defined by the corporate strategy.

The governing organ of CR&T's ideation process, the idea board, gathers twice a month. Attenders are the head of research and all stakeholders involved with the ideas and everyone who is interested is also welcomed to participate. A discussion takes place, whereby the ideas are qualitatively assessed based on research and feedback from markets. Although all interviewees from CR&T had a good knowledge on the ideation process they also mentioned that it is not always clear on what the choices of prioritization are based on. Further, many interviewees, both from CR&T and the business units, mentioned the monthly steering meetings in CR&T as a forum for discussions of ideas. Here the head and management team of CR&T participate, as well as the development heads of the business units that will manage the later steering of the project.

When a group manager within product development was asked how he would pursue an early stage idea, he replied that he would try getting support either in the technology steering meeting or in some of the regular project steering meetings within the business units. Employees can apply for a time slot in any of these committees. If the employee has done his pre work and aligned with key stakeholders, and if budgets and resources are available, the initiative will be approved and the idea provider will report to these two committees on a regular basis. If not, feedback on topics to be solved will be provided.

*"CR&T has regular innovation meetings and BUs have project steering meetings. You know where to find people."* (Innovation Manager, 2015).

Regular project steering meetings often have structures with full presentations where elaborate pre-readings have to be prepared and handed in, although there are more liberal forms to these meetings in some business units. All interviewees stressed the focus on return on investment in such idea presentations. The thought behind the practices of elaborate pre-readings is to, during the actual meeting, take a decision to move the idea forward.

*"You go to these meetings with a clear suggestion. You brainstorm before this, with your team and manager and so on. But when the senior management is involved you have to be prepared."* (Group Manager Product Development Hilti, 2015).

## 4. Within-case analyses

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Although the statement above may indicate the contrary, several interviewees mentioned that ideas that do not get support in such meetings typically are brought up again after some time.

### ***Handover of ideas from CR&T to business unit***

When business units need research, resources are aligned with CR&T. However, there are often no clear processes for handing over ideas from CR&T to a business unit. Ideas for business units are just transferred and it is their responsibility to then proceed with them. In formal research projects, CR&T involves the business units in early research project phases to ensure that they are on board from the beginning and are not surprised during handover. Such idea handovers are rather described as a matter of prioritization, where the business unit considers the relevance in terms of business impact and timing. If the business units do not request the idea themselves however, it will most likely be prioritized quite low on a waiting list.

### ***Personal drive rather than idea management***

When employees within the business units were asked how they would proceed with potential ideas, several interviewees replied that the methodology would be rather random, require much networking and convincing of stakeholders who can in turn help convince other key stakeholders. When a proposal emerges within a business unit, two key stakeholders are described as particularly important: the head of development and the head of projects within the business unit. These two are responsible for budgets and roadmaps and when they agree, a project can be initiated.

*“We don’t manage ideas at Hilti. We do not want a bureaucratic round of businessmen evaluating ideas. It should be easy.”* (Global Process Manager, 2015).

Interviewees from both CR&T and the business units said that ideas typically are brought up several times over several years, even though they have once been dismissed. This was believed to be because ideas are too early with technology not mature enough or need/relevance is not clear yet. It is also linked to the people rotation, as new people typically bring in new ideas or new perspectives on old ideas.

### ***Radical ideas and higher management support***

Within the business units, the technology steering was mentioned as a possible forum for discussing ideas that do not cover existing business areas, as the members here are part of the executive board and thus have a high mandate to discuss such topics. One research engineer within a CR&T believed that if you can convince the technology board, you can drive any type of idea and form a research project. However, interviewees stressed that ideas presented here must fit within Hilti’s core business.

All interviewees agreed on the fact that there today are no ways of setting up teams within the organization and giving them power and budgets to control their own activities. One interviewee within PT&A said that unless a board member supports and champions a radical idea, an independent team will most likely not be formed. Also when discussing business model innovations, several of the interviewees stressed the importance of higher management support for driving these.

# 5. Cross-case analysis

*This chapter presents a comparative analysis between the efforts to manage and stimulate idea implementation at Ericsson's product development unit Packet Core, Volvo Cars and Hilti. It has been highlighted that the five building blocks of the framework for innovation capabilities should be treated as constructs of a complex, interrelated system (Lawson & Samson, 2001), and the same is assumed for the framework that has been adapted to idea implementation. Therefore, this cross-case analysis will end with the application of causal loop diagrams for analyzing and identifying the dynamics behind firms' efforts to manage and stimulate idea implementation as a part of the innovation process.*

## 5.1 Key factors impacting idea implementation

Through table 2 in chapter 2.3.1 a framework for exploration of idea implementation within large firms was presented, including the building blocks innovation strategy and vision, organizational structures, resources, culture and ways of working. The following sections will analyze in depth the various attributes of idea implementation within the three firms, primarily through the factors innovation strategy and vision, resources, corporate culture, and ways of working. Since the factor organizational structure cannot be compared across each firm due to their uniqueness in structures, size and product bases. This aspect of the innovation capability framework is briefly summarized in table 5.

## 5. Cross-case analysis

**Table 5.** Comparison between the firms' organizational structures.

<b>ORGANIZATIONAL STRUCTURES</b>	<ul style="list-style-type: none"> <li>• Packet Core has no official structures to handle radical innovation.</li> <li>• Packet Core's innovation team is a competence hub.</li> <li>• Product management is looking at proven and existing product lines whereas R&amp;D is looking into long term research. According to product management, they should have long term vision but in practice this is hard to achieve.</li> <li>• The whole org. is structured in a waterfall manner, enabling clarification of job resp. Several interviewees believe that creativity therefore is easier to drive top down than bottom up.</li> <li>• Secretive, under the table projects are described as a possibility, and something that is relatively frequently occurring.</li> </ul>	<b>Packet Core</b>
	<ul style="list-style-type: none"> <li>• Two cross-organizational setups for innovation : one is supporting creativity and the other has the role to produce radical innovations. Both are supported from top management levels.</li> <li>• However, ideas from these need to be fed back to the ordinary organization.</li> <li>• The two innovation structures may have recognition problems from the rest of the organization.</li> <li>• Entire organization is located at one geographic level, enabling networking and communication across silos.</li> <li>• Still, silo barriers are described as rigid and decision-makers are not easily identifiable by staff.</li> </ul>	<b>Volvo Cars</b>
	<ul style="list-style-type: none"> <li>• The firm's creativity endeavors are described as focused to CR&amp;T, while the business units are believed to be more focused on execution.</li> <li>• CR&amp;T is believed to primarily focus on creativity related to product innovations.</li> <li>• The org. structure is relatively flat, contributing to a proximity to decision makers.</li> <li>• Employees have a very good knowledge of where decision makers are and the possible forums for getting in touch with them.</li> <li>• There is an apparent sense of competition between the business units.</li> </ul>	<b>Hilti</b>

### 5.1.1 Innovation strategy and vision

#### *Nature of innovation strategy*

Even though neither Ericsson's Packet Core, Volvo Cars nor Hilti had an articulated strategy for producing innovation, comparisons can be made on the firms' official and unofficial ways of handling idea implementation as a phase of the innovation process. At Ericsson's Packet Core product development department, a large majority of the interviewees had noted a push from higher management regarding innovation, mainly through rhetoric which had been translated into different global and local initiatives. Although Ericsson's Packet Core department did not seem to have a clear strategy towards innovation, a strategy toward building innovation capabilities existed. The innovation team at Packet Core identified the innovation capabilities strategy as the way to build muscles necessary to innovate, without clearly differentiating between different types of innovation.

At Volvo Cars, the interviewees gave a multitude of responses to explain Volvo Cars' innovation strategy, indicating a possible lack of awareness about the explicit strategy towards innovation within the firm. However, in Volvo Cars most employees spoke about Volvo Cars' vision and core values rooted in safety and brand perception, and that when

moving forward, Volvo Cars is focusing into areas such as connectivity and electric-mobility. Thus, the interviewees appeared to have a good knowledge about the firm's vision for innovation. Employees considered Volvo to be an innovation leader in the industry and, similar to the Hilti employees, emphasized a recent focus on innovation rather than baseline profits. Further, we have seen how Volvo Cars' innovation strategy clearly differentiates between management of ideas involving smaller degrees of novelty and ideas consisting of larger degree of novelty, at the same time as attempts are made to anchor the strategies in higher management. It is clear that Volvo Cars aims to enable all employees, regardless of hierarchy or position, to through the setups for innovation be able to gather support for any of their potential creative ideas.

Hilti stands out in this comparative study by treating innovation as a means to achieve differentiation, which is derived from the corporate strategy. Here, the innovation strategy is based on differentiation and the strategies that exist focus on reaching innovation through differentiation. Furthermore, Hilti's Corporate Research and Technology possesses a company-wide strategy and numerous processes for how to innovate, primarily aiming at innovation involving high degrees of novelty. However, each of the business units possess a specific strategy and initiatives based on their products and growth areas.

### ***Diffusion and adaptability of the innovation strategy***

At Ericsson's Packet Core, the innovation team is an informal team engaged in building innovation capabilities at PDU Packet Core as a site level initiative. The innovation team was however described through different names such as 'Design Thinking team', 'Innova team' etc. by employees, indicating a lack of awareness about the role of the innovation team in the Packet Core unit. Also, the idea box process that had been put in place to assess innovation capabilities was referred to in different ways by each of the interviewees. Employees did not clearly understand who is in charge of decision-making at the idea box, especially after the initial first week of experimentation. Similarly, at Volvo Cars, there was lack of clarity among employees with respect to the purpose of the corporate wide setups for innovation, as well as a lack of recognition of the setups, mainly due to what appeared to be a lack of good track records and thus credibility of the setups.

When comparing Packet Core and Volvo' Cars' position with that of Hilti, most of the employees and managers clearly understood their role in innovation. They also had a fairly good understanding of the roles and responsibilities of the business units in relation to CR&T. This clarity in roles and responsibilities may be a characteristic of a flat and highly hierarchical organization where there is a clear distinction of job duties and responsibilities. However, what was characteristic of Hilti in comparison with the other firms was that not all employees perceived it to be their role to be creative; rather, this was often perceived to primarily be the role of CR&T.

### ***Role of leadership in the innovation strategy***

Within Ericsson's Packet Core there appeared to be a high level of top management push towards innovation and creativity. This was evident through management rhetoric and various site level initiatives such as hackathons, workshops and posters around the site emphasizing the importance of innovation and creativity for the firm's competitive advantage. At the same time, some Packet Core employees mentioned that they felt somewhat distanced from their higher management, which could be a problem for gaining support for ideas involving higher degrees of creativity.

**5. Cross-case analysis**

In contrast to Packet Core, at Hilti there were not too many special initiatives towards innovation, possibly due to the perception among Hilti managers that innovation should be routinized as part of everyday task rather than seen as a special task for employees to concentrate on. Hilti interviewees often brought up that management tends to be highly involved in creativity endeavors. At Volvo Cars, there were special initiatives taken by managers, as well as a high degree of management involvement, for taking care of creative ideas and to provide credibility to the setups. However, similarly to the Ericsson Packet Core case, Volvo Cars’ higher management was often perceived to be rather distanced from employees, and not always easily approachable with creative initiatives.

A summary of the comparisons between the firms’ innovation strategies and visions for managing and stimulating idea implementation is displayed through table 6.

**Table 6.** Comparisons between the firms’ strategies and visions for implementing ideas.

<b>INNOVATION STRATEGY AND VISION</b>	<ul style="list-style-type: none"> <li>• Interviewees tended to highlight the firm’s long heritage of innovation and standard creation. They also tended to point out the fact that higher management talks much about the importance of innovation.</li> <li>• PDU Packet Core works on building innovation capabilities, through management education, team building activities and more.</li> <li>• Most people were aware of the corp vision and strategy: improving existing products while focusing on cloud and virtualization.</li> <li>• Several departments provide support and structures for idea providers. However, none of these are targeting radical innovation.</li> </ul>	<b>Packet Core</b>
	<ul style="list-style-type: none"> <li>• Most interviewees appeared as enthusiastic about Volvo Cars position as an innovation leader in its industry.</li> <li>• Employees noted a clear management push towards creativity, rather than baseline profits, in recent time.</li> <li>• Several interviewees struggled with describing Volvo Cars’ vision further than the areas safety, connectivity and brand strength.</li> <li>• Otherwise, interviewees thought that each department has its own strategy for how, and in which direction, to innovate.</li> </ul>	<b>Volvo Cars</b>
	<ul style="list-style-type: none"> <li>• Most interviewees described and related Hilti’s goals for innovation to the corporate strategy’s goals of differentiation.</li> <li>• Innovation was perceived as the means to fulfill the differentiation strategy.</li> <li>• Overall a high degree of focus on the core business, hardware + software, at most hierarchical levels.</li> <li>• Most interviewees believe that the Corporate Research and Technology (CR&amp;T) are the ones responsible for creativity in the firm.</li> <li>• Apart from the work in CR&amp;T, there are some business unit specific initiatives for creativity.</li> </ul>	<b>Hilti</b>

**5.1.2 Resources**

***Availability of tangible and intangible resources***

Volvo Cars’ cross-functional IT innovation office had support from the highest management, as well as its own budget and resources, which gives the team a high degree of freedom to operate. However, in the rest of the organization this was identified as a problem as employees often struggled to get funding and other support for radical ideas. Even though setups such as a Greenhouse and an Innovation Management Forum exist for helping employees with all types of ideas, including incremental, radical and cross-organizational, the lack of information and track records from such setups appeared to be a hinder for resource allocation. At Ericsson’s Packet Core, the setup was completely different as the product owners appeared to have much power on the budget allocations, which may have given clarity in decision making, but for ideas involving larger degree of novelty a higher degree of support



from top level management may have been required. At Packet Core however, employees tended to believe that it is the product managers who have the main decision making power with regard to creativity initiatives. At the same time, employees emphasized that most product managers focus on delivering existing products and feature upgrades rather than exploring avenues for ideas with high degrees of novelty.

Once again, Hilti stood out in the comparison. Although there appeared to be a high degree of clarity among Hilti employees on how to get resources for ideas, interviewees here expressed a feeling of pressure in presenting ideas due to a high proximity to higher management. Common for all firms in this study was that most interviewees expressed a lack of slack time to work on their own initiatives.

### ***Ability to exploit tangible/intangible resources for a specific purpose***

At Ericsson, the innovation team was an informal team setup to improve the innovation capabilities at the PDU level. The interviewees could not mention any teams or units for handling innovation across the organization which may have made it challenging for employees to push radical ideas. At Volvo Cars, the Innovation Forum was a special unit with formal authority and resources to push innovation across the organization. The mere existence of this team was believed to foster higher management attention on grass root activities related to creativity.

At Hilti, the CR&T is tasked with handling radical innovation and interviewees said that budget or time to work with ideas is not a problem for them but that time for creativity is considered to be a concern as the focus for creativity at CR&T is much higher than the business units. Naturally, CR&T has a high degree of freedom and slack resources to work with creative ideas. However, the limited cross business unit information sharing which is believed to hinder resource allocation and collaboration across business units.

A summary of the comparisons between the firms' resource management in relation to idea implementation is displayed in table 7.

## 5. Cross-case analysis

**Table 7.** Comparison between the firms' resource management with regard to idea implementation.

<b>RESOURCES</b>	<ul style="list-style-type: none"> <li>• All products at Ericsson have a product owner who holds the budget for their respective product. This ensures clarity in decision making for resource allocation.</li> <li>• Hackathons are important resources for collaborating and creativity on a site level.</li> <li>• The innovation team is an unofficial team without resources. Also, it has no mandate to change processes or setups.</li> <li>• The experimentation week from ideas box is provided only to the idea provider, not a team.</li> <li>• It is often important to project ideas on a large stage in order to get management support. But since deciding management levels are distanced from operations, reaching this contact may be difficult.</li> </ul>	<b>Packet Core</b>
	<ul style="list-style-type: none"> <li>• The independent team with the task of performing radical innovation has its own budget and is therefore independent. The supporting team is not.</li> <li>• The supporting innovation organization provides time and guidance for idea implementation. However, the track record of their activities is poor.</li> <li>• The existing processes and setups dedicated to innovation are sometimes perceived as inefficient.</li> <li>• Car-centered processes are described as an obstacle for resource allocation to ideas related to other types of innovation.</li> <li>• Resources for project initiation requires anchoring at high levels, which in turn drives networking for attaining resources for idea implementation.</li> </ul>	<b>Volvo Cars</b>
	<ul style="list-style-type: none"> <li>• In CR&amp;T, 10% of employees' time is supposed to be spent on creativity. In the business units people have considerably less time for creativity.</li> <li>• CR&amp;T and business units often negotiate over resources for idea exploration.</li> <li>• High employee rotation and poor info sharing between business units may cause information to get lost.</li> <li>• Due to a flat structure and clear processes, decision makers can be easily approachable and identifiable.</li> <li>• Although decision making is described as mostly being transparent, the basis of the decision making for handover of ideas from CR&amp;T to business units is described as somewhat unclear at operational levels.</li> </ul>	<b>Hilti</b>

### 5.1.3 Culture

#### *Communication and decision making*

At Ericsson's Packet Core, innovation is very much discussed and has in later times been a frequent topic among higher management who has stressed the importance of innovation for Ericsson's future competitiveness. However, while managers perceived innovation as an everyday routine for their employees, the employees perceived creativity as not being part of their routine tasks. Thus, there appear to be a misalignment from the top management to the lower level of operational employees.

In contrast, employees at Hilti treat ideas that are incremental as part of their daily job while the radical ideas are treated under formalized processes. Here, both managers and employees at the operational levels believed that the business units primarily have an executing task, whereas creativity is mainly the task of CR& T. At Volvo Cars, although there is little room for radical innovation to take place as part of routine operations, employees do have the setups such as the Innovation Management Forum and the Greenhouse to help them work with radical ideas, clearly signaling that ideas and initiatives at the operational levels are welcomed.

#### *Failure and work norms*

Both at Ericsson's Packet Core and at Volvo Cars, most interviewees said that it is okay to keep failing from time to time but the real problem begins when the idea is proved successful and when further support is needed. In these firms interviewees also tended to point out that it is important not to step on anyone's toes when driving ideas. At Volvo Cars, failures are often

discussed, both locally and at innovation forums, which may signal an openness to learning from failure by higher management. At Hilti, interviewees consistently expressed that an initiative is considered a failure only when adequate effort has not been made to test the idea, and when a dropped idea is made a success by a competitor.

Ericsson's Packet Core did not have a standard incentive structure to identify employees' contribution towards innovation. At Hilti, the global innovation award was considered a source of motivation as it gives the possibility to be recognized by higher management. A similar award at Volvo Cars called the Greenhouse Award was quoted by some interviewees to be motivating but a few other interviewees did mention it as not a real motivation. Employees at both Ericsson's Packet Core and Volvo Cars appeared to have high freedom to work with undercover operations which is a sign of management's openness and flexibility in dealing with creativity.

Both at Volvo Cars and Ericsson's Packet Core, there was much focus on market needs and business potential, which was believed to severely limit the potential to push radical ideas within the organization. At Hilti, success was not financially assessed which is believed to give the employees more freedom to operate. Here, performance of employees, mainly within CR&T, was assessed based on engagement in innovative endeavors.

A summary of the comparisons between the firms' culture with regard to idea implementation is displayed in table 8.

## 5. Cross-case analysis

**Table 8.** Comparison between the firms' cultures with regard to idea implementation.

<b>CULTURE</b>	<ul style="list-style-type: none"> <li>• Little collaboration between business units due to fear of 'stepping on toes' - intruding into other responsibility areas and product lines.</li> <li>• Interviewees mentioned secretive projects on a grass root initiative.</li> <li>• Ideas submitted through formal channels are described as rarely being executed - signs of distrust towards such processes.</li> <li>• Employees regard innovation as big changes while middle and higher management regard innovation as both incremental and radical change.</li> <li>• Managers are more confident when explaining their role in innovation than employees operational levels.</li> <li>• Interviewees perceive that it is difficult to be open about failures.</li> <li>• Little people rotation between departments and units.</li> </ul>	<b>Packet Core</b>
	<ul style="list-style-type: none"> <li>• Employees are not afraid of expressing their opinions; there are many bold personalities within the firm.</li> <li>• Much emphasis on consensus for letting ideas develop further; employees often fear their creativity will intrude on other's responsibility areas.</li> <li>• Much focus is given on market needs in the early stage of ideas, reflected by the fact the it is described as difficult to sell in ideas to other functional silos.</li> <li>• Failures are often discussed in different meetings and forums.</li> <li>• Current firm image of being an innovation leader creates enthusiasm.</li> <li>• Much emphasis on staff diversity in relation to innovation.</li> </ul>	<b>Volvo Cars</b>
	<ul style="list-style-type: none"> <li>• A strong culture of anchoring and networking for preparation of ideas before the formal "assessments" in the business units. CR&amp;T works on minimizing such barriers.</li> <li>• Due to high degree of management attendance in meetings etc., and high demands on the presentation material, taking risks or displaying failure here may be avoided in such forums.</li> <li>• A clear push for entrepreneurship from the top management. Failure is usually considered as not trying.</li> <li>• Within CR&amp;T, performance is evaluated based on result and creativity. In the business units. Performance is rarely evaluated based on creativity.</li> <li>• The chance to get recognition is widely considered the greatest motivation for creativity.</li> </ul>	<b>Hilti</b>

### 5.1.4 Ways of working

Among the three firms Volvo Cars was the firm with the most mature structures for managing ideas, where processes exist at both local and global levels, and which are often adapted to the degree of novelty of the ideas. For example, radical ideas are incubated in the Greenhouse which is a formal process championed by higher management, and the Innovation Forum is a special unit with top management involvement that closely follows the activities of the Greenhouse providing visibility and mentorship to the idea providers. Also, the IT innovation office has its special way of working with radical ideas. This sort of top management involvement was largely lacking at Ericsson's PDU Packet Core. Here, initiatives such as the idea box struggle to get higher management attention and most employees interviewed struggled to explain these processes and were not aware of how to make use of them.

At Hilti, CR&T has a clear decision making process which helps employees pushing ideas through the formal set ups within the organization. However, due to very clear, and often described as rigid, process and structures for idea implementation at Hilti, so called under the table processes require top management support usually, which in turn might reduce flexibility in working informally with creative ideas. In contrast to Hilti, unofficial initiatives based on personal drive and networking appeared to be common practices at both Ericsson's Packet Core and Volvo Cars.

A summary of the comparisons between the firms' ways of working with regard to idea implementation is displayed in table 9.

**Table 9.** Comparisons between the firms' ways of working with regard to idea implementation.

<b>WAYS OF WORKING</b>	<ul style="list-style-type: none"> <li>• The official idea funnel does not have a proven track record.</li> <li>• Although idea box meetings are happening weekly, not many are aware of them, nor of who is attending them.</li> <li>• Most ideas are assessed based on business case and ROI. Managers stress the importance of assessing radical ideas through simpler business cases.</li> <li>• So called unofficial skunk works (or 'under the table projects') are said to be undertaken all over the Ericsson Gothenburg site.</li> <li>• Manager tend to speak confidently speak about their role in supporting innovative ideas towards implementation.</li> <li>• There is not much culture of bringing up ideas after they have once been disapproved by management.</li> </ul>	<b>Packet Core</b>
	<ul style="list-style-type: none"> <li>• There are formal process championed by VPs and SVPs to implement radical ideas. The awareness of these is limited however.</li> <li>• Many have limited knowledge of the work of the cross-organizational, innovating, team. Also, there are no processes for handover of their ideas to the standardized processes.</li> <li>• Many functions/units own formal processes for handling ideas., often including phases for management reviews.</li> <li>• Meetings are usually open for anyone to attend, with floating attendants.</li> <li>• Employees have good knowledge about Volvo Cars' customers.</li> <li>• The process-centered way of working with ideas may be perceived as rigid and thus discouraging.</li> </ul>	<b>Volvo Cars</b>
	<ul style="list-style-type: none"> <li>• High degree of awareness of, and knowledge about, the standardized corporate processes.. Also a high level of trust in the processes; common that employees refer to them in discussions about creativity.</li> <li>• Interviewees consistently mention two types of regular meetings, both in CR&amp;T and one in the business units, as opportunities for presenting ideas.</li> <li>• CR&amp;T has an ideation process, with systematic and clear management, and with involvement of high-level management.</li> <li>• Difficult to progress with ideas without proven business value.</li> <li>• Little transparency in the way in which ideas are transferred fro CR&amp;T to business units.</li> <li>• Ideas are commonly revived after some time.</li> </ul>	<b>Hilti</b>

## 5.2 Dynamics behind idea implementation

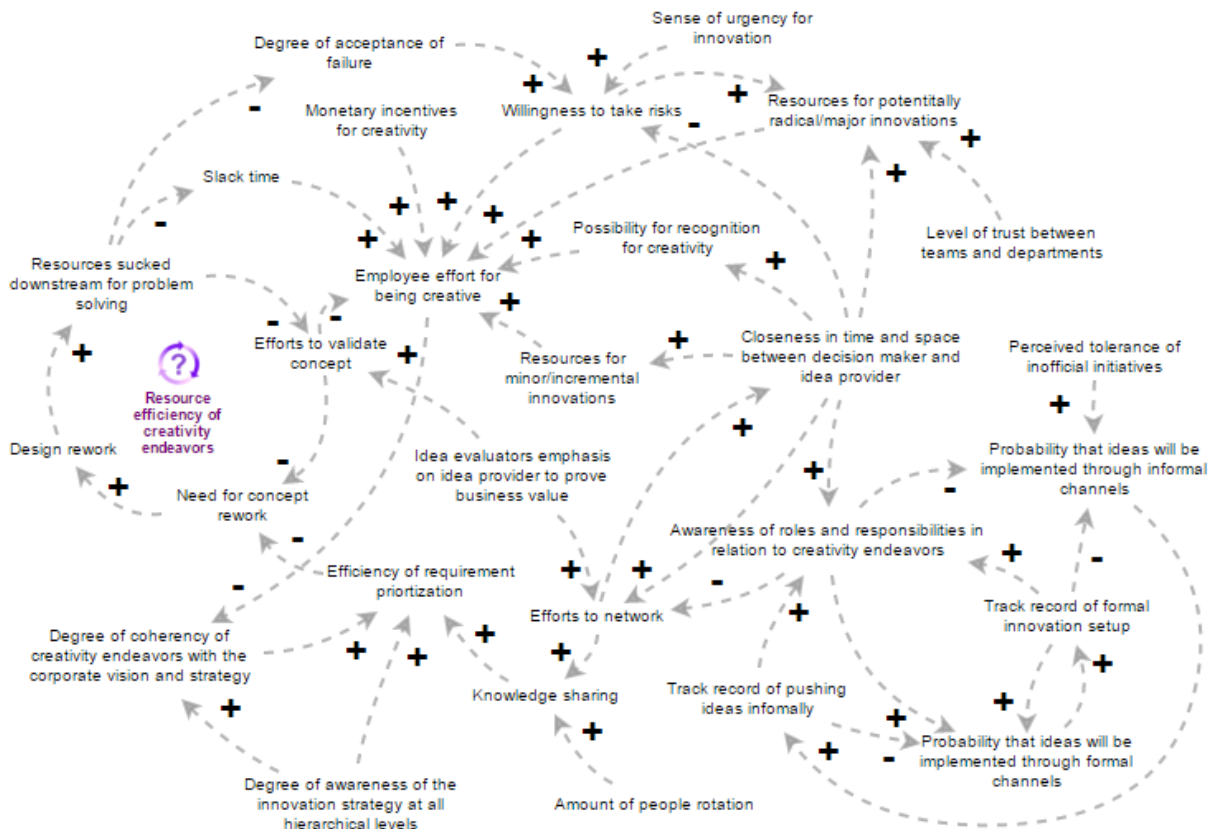
Innovation capabilities has been recognized as a concept that needs to be treated as an interrelated system (Lawson & Samson, 2001). Therefore, instead of treating the factors identified in section 5.1 in isolation from each other, it is relevant to consider the system dynamics behind the innovation capability framework, in this study focusing on idea implementation specifically. Here, an attempt to do so is made through the use of the concept System Dynamics and through a causal loop diagram. Section 5.2.1 explains the researchers' general mental model of such a system, and in 5.3 this mental model is applied for a concluding analysis on the main differences between idea implementation at the different firms.

### 5.2.1 Towards a system view on idea implementation

Based on the main differences and similarities between the participating firms' efforts to manage and stimulate idea implementation as identified in chapter 5.1, assumptions can be made about the system dynamics behind idea implementation. The variables and causal connections constituting the causal loop diagram in figure 12 represent the researchers'

## 5. Cross-case analysis

mental model of such a system, constituting of topics identified from the interviews from a synthesis of the interview data with employees from Ericsson's Packet Core, Volvo Cars and Hilti. For illustrative purposes, such a loop is displayed in purple in figure 12, named 'Resource efficiency of creativity endeavors'.



**Figure 12.** Dynamics behind the firms' efforts to manage and stimulate idea implementation.

Starting from the left in figure 12, the loop 'Resource efficiency of creativity endeavors' displays that a need for concept rework will require design rework within product development or research. Design rework requires resources for problem solving and takes resources away from efforts to validate concepts, naturally requiring a larger need for concept rework. Moving upwards from the loop, it is shown that as resources are sucked downstream for problem solving, the management acceptance of failure will decrease, in turn impacting employees' willingness to take risks.

The reason for why management seems to avoid risk taking as a result from increased resource utilization is because they in turn respond to their own management and are answerable for the operational costs of their teams and departments. Another result of resources being sucked upstream is that the amount of slack time decreases. Slack time has been connected to the innovativeness of an organization and is, together with monetary incentives for innovation, assumed to positively impact employees' efforts to be creative. Creativity efforts are further believed to be impacted by the amount of resources allocated to innovation, and the possibility for recognition for creative initiatives.

The more sense of urgency for change and innovation that exists within the firm, the more employees are assumed to be willing to take risks. However, within all the three firms there are also indications that closeness in time and space between decision makers and idea

provider tends to decrease the idea provider's willingness to take risks since failures will inevitably be noted by managers.

The upper right corner of the causal loop diagram shows that closeness in space and time between decision maker and idea provider, as well as a willingness to take risks, positively impacts the resource allocation for potentially radical innovations. Decision makers are here identified as important enablers for such risk taking, through providing the right recognition for creativity, which in turn require a reasonable proximity in time and space between decision makers and idea providers. Another example enabling such risk taking is identified as being networking, a factor crucial for a firm's idea implementation capabilities. In this upper right corner to the causal loop diagram we also see that the level of trust between teams and departments is believed to have a positive impact on the amount of resource allocation for potentially radical ideas.

Moving down in the figure, it is shown that closeness in time and space between decision maker and idea provider is impacted by the idea provider's efforts to network. The efforts to network are also impacted by the closeness to decision makers, as idea providers are more incentivized to network if they know that there is a possibility to eventually reach crucial stakeholders. As seen, overall awareness of roles and responsibilities in relation to creativity endeavors is believed to play a key role in these interconnections.

In the causal loop diagram in figure 12 different setups for idea implementation are represented in the bottom right corner, illustrating how ideas tend to take routes either through formal or through informal routes, e.g. through personal networks. The assumption is that the higher the perceived tolerance of unofficial initiatives, the higher probability that ideas will be implemented through informal channels. This probability is affected by the awareness of roles and responsibilities in relation to creativity endeavors, but also of the track record of formal innovation setups, as good track records increase the degree of recognition of official innovation setups and thus the probability that these will be used.

In the figure's bottom left corner, we see that the amount of people rotation, as well as the idea provider's efforts to network, increases the knowledge sharing within the firm. The higher the knowledge sharing, the more efficient the requirement prioritization of the idea will be. The requirement prioritization is further believed to be impacted by the degree of awareness of the innovation strategy and its diffusion through the firm's hierarchical levels, as well as of the degree of coherency of creativity endeavors with the corporate vision and strategy. This factor, in turn is believed to be influenced by the employees' efforts for being creative, as it is assumed that the higher the general creativity level, the higher degree of the creativity endeavors will not be coherent with the corporate strategy and vision.

Finally, figure 12 shows that the more emphasis stakeholders put on idea provider to prove business value, the more efforts to network and validate concept is believed to be made by the idea provider. However, it is also assumed that the more emphasis the idea provider puts on validating concepts, the less the level of creativity will be.

### 5.3 Comparative analysis

As has been shown in 5.1, the firms' efforts to manage and stimulate idea implementation differ considerably. The differences are assumed to result in firms having different strength, or load in, different variables and flows in figure 12's causal loop diagram. In Appendix 5

## 5. Cross-case analysis

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each firm's strengths are highlighted in red. These differences enable conclusions to be drawn about the main differences in three firms' efforts to manage and stimulate idea implementation.

### *Identifying the key the differences between Ericsson's Packet Core, Volvo Cars and Hilti's efforts to manage and stimulate idea implementation*

At Ericsson's product development unit Packet Core, the sense of urgency for innovation is considered to be high. Interviewees tended to point out that the firm's rapidly evolving industry and high level of technological uncertainty necessitates innovation, as well as the fact that management in latter time has tended to stress innovation as a key competence and success factor of the firm. As shown in the empirical chapter, many initiatives have been undertaken at both a local Packet Core and a corporate level for supporting such ambitions, such as hackathon events, organization of local innovation teams and management innovation trainings.

Within Volvo Cars, the sense of urgency for innovation is also considered to be high, although in a different format; an optimistic spirit in relation to creativity within the firm was noted in the interview, probably caused by the firm's recent successes in bringing innovative technologies and offers to the market. At Hilti, a sense of urgency was not identified in the same sense; in fact, there appeared to be a perception that it is mainly the CR&T organization that is supposed to be truly creative within the firm.

As seen in the causal loop diagram in figure 12, the sense of urgency for innovation is believed to impact the employees' willingness to take risks. But although the sense of urgency is considered high at Ericsson's Packet Core, the employees' willingness to take risks is not considered as high as at Volvo Cars. The reason is assumed to have cultural roots - at Volvo Cars the fear of failure appeared to be less than in both Ericsson Packet Core and Hilti. This lack of fear of failure, combined with the fact that Volvo Cars employees appear to be closer to their customers (most employees are customers themselves) than both the other firms, may be a factor increasing the motivation for risk taking by employees.

Hilti is believed to differ from the other firms in what is perceived as a flatter and more compressed organizational structure, which is believed to increase the likelihood that employees will be recognized for their creative initiatives, and thereby their motivation for pursuing creative ideas. In fact, this is a factor where Hilti is considered to stand out in comparison with the other firms, as closeness in time and space between decision makers has been identified as a factor strongly impacting the ability to push ideas forward. Within Ericsson's Packet Core in particular, but also Volvo Cars, employees were perceived to be considerably more distanced from the relevant decision makers than Hilti employees.

Another factor considered strong for Hilti is the degree of awareness of roles and responsibilities in relation to creativity endeavors. Hilti's flat organizational structure in combination with its standardized processes and culture of hierarchical decision making is considered to be the reason. Furthermore, in interviewees with Hilti employees the researchers noted a high degree of coherence in responses regarding place and approachability of decision makers in relation to creative initiatives. This can be put in contrast with Ericsson's Packet Core and Volvo Cars, where such clarity was not noted to the same extent, probably due to the more complicated organizational structures and not as clear or well-understood processes for creativity endeavors.



Within Packet Core there appears to be a high degree of perceived tolerance for unofficial creativity initiatives, represented in the bottom right corner of figure 12. Unofficial initiatives, sometimes referred to as ‘under the table projects’ appeared to have good track records, which, in combination with assumingly low degrees of trust in the official setups for idea implementation, is believed to decrease the probability that ideas will be implemented through formal channels. A similar dynamics was noted at Volvo Cars, the firm which appeared to have the most mature setup for supporting employees’ creativity endeavors. Here, these setups appeared to be facing issues with recognition and lack of awareness among employees, limited budgets, as well as lack of positive track records. The firm standing out in succeeding in creating a high level of trust and usability of the official setups for creativity and idea implementation is Hilti. At Hilti, interviewees tended to, in a uniform and consistent manner, point out the official structures and regular meetings as places that they would turn to with ideas; they even tended to be relatively aware of the differences in where to turn to for driving more incremental versus more radical ideas.

At Ericsson’s Packet Core, there were much resources allocated for supporting potentially radical ideas, as shown by the numerous local and global initiatives existing within the firm. However, a dynamics may have been shaped where the creativity endeavors are perceived to lack coherency with the corporate strategy and vision. At Hilti, the situation was different, as the degree of coherency of creativity endeavors with the corporate vision and strategy is considered to be extremely high. Also, compared to the other firms Hilti stands out in having a policy of people rotation, enabling a high degree of knowledge sharing, all which is believed to be positive for the efficiency of requirement prioritization.

Within the two Swedish firms, Ericsson and Volvo Cars, a ‘fear of stepping on people’s toes’-mentality was noted. This, together with less people rotation, is believed to inhibit the amount of potential networking and knowledge sharing. At the same time, the carefulness of not intruding in others’ business areas, in combination with larger distances in time and space between decision maker and idea provider, may be factors that delimit employees’ feeling of being supervised, and may thereby function as an idea implementation enabler.

## 6. Discussion

*The analysis presented in chapter 5 will serve as a foundation to the following chapter. It aims to, through a discussion, answer the study's three research questions: RQ1) What capabilities must large firms possess in order to be able to implement ideas in the innovation process?; RQ2) What do large firms do to ensure successful implementation of creative ideas?; RQ3) How can Ericsson learn from approaches towards idea implementation at other large firms?*

### ***RQ1) What capabilities must large firms possess in order to be able to implement ideas in the innovation process?***

As shown by authors such as Govindarajan and Trimble (2005), Kanter (1989), and Tushman and O'Reilly (1996), organizations must ask themselves to what extent production of different streams of innovation is desired, and adapt their innovation strategy thereafter (Lawson & Samson, 2001). For example, 'evaluating' all types of ideas through the same types of business cases and decision making processes appears to be inefficient. We have shown that innovation is a broad term (Baregheh et al., 2009; Bullinger, 2008), and that there is no one common understanding of its meaning among scholars (Bullinger, 2008). The meaning of innovation includes different types of novelty (Bullinger, 2008), both in terms of it being an outcome (for example, product innovation, process innovation and business model innovation), and a process (Crossan & Apaydin, 2010).

Therefore we argue that it is not enough to expect employees, who often have limited resources and knowledge in the topic of innovation, to understand all types of innovation. Rather, in accordance with Björkdahl and Börjesson's (2011) and Nonaka and Takeuchi's (1996) reasoning, it should be the task of higher management to formulate a strategy for innovation, and to, with the help of the middle management, make sure that the strategy diffuses down throughout the organization's operational levels. Inspired by Lawson and Samson (2001), we further noted an importance of combining such strategies with a vision that sets stretch goals for innovation in order to foster creativity; only then can structure and efficiency be achieved in the organized chaos that is required for innovation to be produced.

Hilti has been a good example of this, where higher management is highly involved in the official setups for innovation, and where a large part of the organization appears to be aware of the firm's strategy for innovation. Volvo Cars has extensive setups and structures for managing the newstreams, i.e. larger degrees of novelty, as well as for anchoring these in higher management. However, due to what appears as higher degrees of organizational complexity and less involvement of higher management, and thereby less focused resource availability, within the newstream workflows, Volvo Cars' newstream setups to a certain extent appear to be facing hindrances regarding recognition from the rest of the organization.

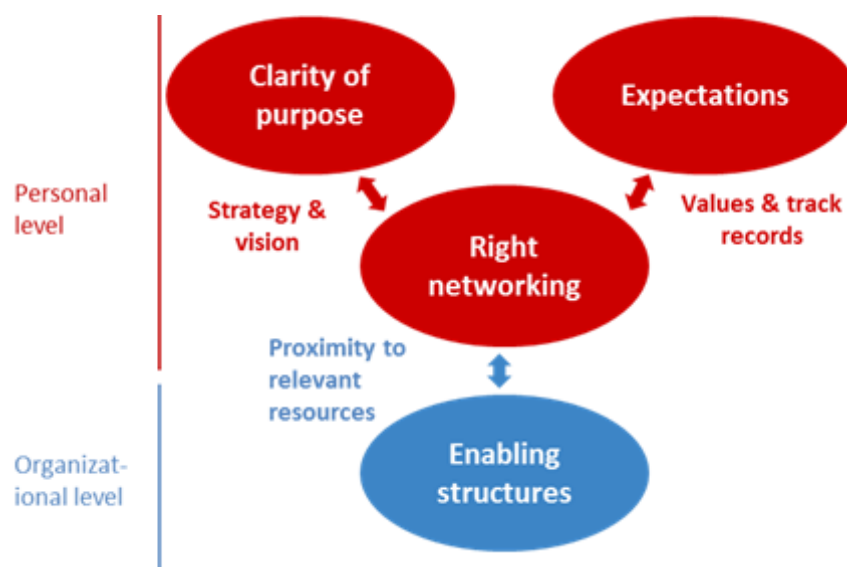
Overall, official setups for innovation, in particular the ones directed at newstream innovation, appear to generally struggle with recognition of, and trust, from the oldstream organization. Govindarajan and Trimble (2005) explained such problematics by stating that newstream innovation practices inevitably will create tensions between the new and old businesses. As we have shown in the causal loop diagram, the tensions between the oldstream and newstream setups appear to mainly have a cultural and a recognition reason.

Furthermore, the more unofficial initiatives are supported, and the more track records such initiatives appear to have, the more they will be preferred above the official ones. However, as

we have seen at Hilti, there are risks with highly formal workflows when it comes to idea management. If for example management is distrusted or if the idea provider does not have knowledge enough to present an idea, it can be positive if the idea provider instead works on his/her/their initiatives unofficially. Related, we have noted the amount of networking as being crucial for the ability to implement ideas, a reasoning which lies precisely in line with Bear's (2012) conclusion that employees' possibilities and abilities to network is decisive for their idea potential to implement ideas.

At the same time, and as illustrated in the causal loop diagram in figure 12, proximity in time and space to relevant stakeholders enables networking, but we have noted that the expectation of the so called idea evaluation, or demand of proving business value, is another factor encouraging networking through a push for idea providers' attempts to network and prepare. It may therefore be important to provide information and transparency of the existing setups for innovation, and make sure that employees at all operational levels have the right knowledge and expectations of these. In this study, we have shown that Hilti is a good example of such knowledge diffusion.

Based on this discussion, figure 13 summarizes what has been identified as the key capabilities required for idea implementation. On a personal employee level, there appears to be three interlinked factors that must be considered for the management and encouragement of idea implementation; clarity of purpose (obtained through an understood vision and strategy), expectations of what may be waiting in terms of idea assessment (obtained through motivation, right values and track records of such practices) and right networking. On an organizational level we have seen that there needs to be practical structures in place (such as processes and other setups), which we argue is an important factor for the encouragement of networking within the firm.



**Figure 13.** Summary of the key capabilities that firms must possess in order to be able to implement ideas in the innovation process.

***RQ2) What do large firms do to ensure successful implementation of creative ideas?***

Various initiatives towards innovation were clearly visible at Ericsson's Packet Core as there was a clear push towards innovation from higher management with local, site level, initiatives such as hackathons, guest lectures and workshops as outcomes. In fact, out of the three firms participating in the comparative study, within Ericsson's PDU Packet Core there appeared to

## 6. Discussion

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be the highest sense of urgency regarding innovation, with several interviewees pointing out that higher management in latter time had urged for innovative results. Lawson and Samson (2001) indeed argued that it is in particular good if the vision for innovation infuses a sense of urgency with the employees in order to create the ultimate desire for creativity.

Within Ericsson's Packet Core, so called under the table projects seemed to be a frequent practice for driving creative initiatives, indicating a high degree of freedom and belief in networking among employees for implementing ideas. Baer (2012) indeed preferred to describe idea implementation as a mainly sociopolitical process where unofficial factors such as networking and motivation are decisive for the possibilities to implement ideas. Such unofficial, or under the table activities, were hardly mentioned by Hilti employees which may be due to proximity of higher management to operational activities or that the existing processes are so efficient and trusted that they do not warrant such unofficial initiatives.

Similar to Packet Core, Volvo Cars, who had centralized processes for innovation anchored in the highest management for enabling better access to resources, appeared to have many employees preferring informal rather than formal ways of working with regard to idea implementation. Here, employees also expressed a lack of fear in pursuing their ideas which could be attributed to a possible tolerance exhibited by top managers towards employees taking risks. Related, authors such as Assink (2006) and Lawson and Samson (2001) identified the ability to take risks, work under uncertainty as well as willingness to take risks as necessary for long term success with regard to innovation.

At Volvo Cars, pan-organizational innovation setups such as the Innovation Management Forum provide employees with radical or ideas different from routine improvements to contact higher management. Also, the Greenhouse collects ideas from across the organization and incubates the ideas towards implementation. In order to implement radical ideas, there needs to be setups to incubate ideas from across the organization where employees get access to the necessary resources, preferably in the form of independent organizations championed by higher management (Tushman & O'Reilly, 1996). In the comparison, we have seen that Volvo Cars' setups dedicated to radical innovation is unique in the sense that employees from the whole organization have the chance to implement their ideas and thus act creatively.

Hilti had a rather flat organizational structure with clear processes that were well communicated, and wherein the middle management appeared to be involved with problem solving. Due to the high degree of clarity regarding the processes, the knowledge spread on how and by whom decisions would be taken appeared to be high. The high degree of knowledge spread of, as well as high trust in, the research and development processes within Hilti is consistent with Dougherty and Hardy's (1996) argument stating that in order to develop capabilities for sustained innovation, large firms need to connect the firm to the innovation process through provision of collaborative structures and processes to solve problems creatively and connect innovations with existing businesses.

Anthony et al. (2006) further argued that it is beneficial if decision makers to some extent act as problem solvers in the operational work - a practice that Hilti thus appears to have embraced. Lastly, within Hilti there was a high degree of people rotation between functions and work roles, which, as shown in figure 12, in turn is believed to be an important factor for enabling creativity, collaboration, and networking. The assumptions appear to be consistent with Guan and Ma's (2003) argument that the firm's ability to identify, assimilate and exploit knowledge is crucial for a firm's competitive success.

***RQ3) How can Packet Core learn from approaches towards idea implementation at other large firms?***

Today, the strategy for building innovation capabilities within Packet Core mainly aims at building management's competencies in the topic of innovation. The execution of this strategy can be considered to be successful, as managers in interviews appeared to talk about practices for managing and stimulating idea implementation with a high level of confidence. However, a discrepancy was noted between Packet Core's management levels and operational levels, as operational employees such as software engineers often did not appear to be able to relate to their particular role in Ericsson's management's recent push for innovation. This can be put in contrast to Hilti, where employees, regardless of operational level and with a high level of consistency, appeared to be able to relate their role and possibilities to implementation of ideas.

Indeed, Björkdahl and Börjesson (2011) have stated that an innovation strategy needs to be clear, communicated and understood throughout the firm to properly transfer the vision to the firm's employees, and Ahmed (1998) showed that firms must possess the ability to exploit their resources towards a specific purpose. Thus, Packet Core can learn from the case of Hilti by investing in diffusing the strategy for building innovation capabilities throughout the organization's operational levels, as well as by ensuring that the structures and setups enable such a strategy to be carried through.

Regardless of operational level, Packet Core employees did not appear to have confidence in the existing setups for idea implementation, in particular the idea box for which none of the interviewees could describe the full process, nor mention a success story. Neither did employees mention a corporate centralized space for idea evaluation (although higher management pointed out the existence of such at Ericsson's main site in Stockholm). Instead, innovative initiatives were most often believed to be pursued informally within the Gothenburg site. Again, a comparison can be made with the Hilti case where employees had a high level of trust towards the official structures.

The reason for why Hilti appears to be successful in the aspect that employees appear to trust the processes may be that higher management is highly involved in Hilti's official structures and processes for idea implementation, something that authors such as Kanter (1989) and Tushman and O'Reilly (1996) described as important for inducing trust and authority in setups for radical innovations. Also, within Hilti there is a high knowledge level among employees about the processes, as well as good track records. However, it must be recognized that Ericsson's large organization, where Packet Core employees naturally are distanced from higher management, may be an obstacle to achieving the same results of higher management involvement as within Hilti.

Still, Packet Core may benefit from clarifying its vision towards innovation. Even though structures such as the idea box exist, they appear to be highly interlinked with the product management who were often described as the final evaluators of ideas. But as product managers themselves said, their primary aim is to satisfy their existing customer bases. Thus, the existing structures within Packet Core appear to primarily target ideas related to sustaining innovations.

However, most Ericsson interviewees perceived the firm's recent push towards innovation as aiming at radical ideas, or at least ideas with higher degrees of novelty. Here, Ericsson's

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Packet Core can learn from both Volvo Cars and Hilti, whose strategies are consistent with the employees' perception of the corporate vision. Whereas Volvo Cars has established setups for supporting ideas of all degrees of novelty (although these appear to be facing some recognition issues) for all parts of the organization, Hilti has done the same, though with a vision that to a lesser extent emphasizing creativity within the product development department and here instead focusing on incremental, sustaining innovations.

Both Volvo Cars and Hilti appeared to have clearly divided their visions for so called oldstream and newstream innovation, and adapted their innovation strategies thereafter, thereby relieving the single employee from the burden of strategizing within what can be described as the vast field of innovation. Both firms have further made an attempt to tie setups aiming at newstream innovation to higher management. Perhaps due to resource efficiency reasons, both Volvo Cars and Hilti have also made such structures cross-organizational.

Although the executions differ, these firms are perceived as good examples of Govindarajan and Trimble's (2005), Lawson and Samson's (2001), and Tushman and O'Reilly's (1996) descriptions of how to manage so called oldstream and newstream innovation. We argue that Ericsson can learn from these examples, by in the Gothenburg site organizing centralized initiatives for more radical ideas. In contrast to today, where many such local initiatives exist throughout the site, the result would be standardization, increased clarity for employees and thereby optimization of resource allocation. We further argue that Ericsson can learn from Volvo Cars and Hilti by securing anchoring of higher management in such setups, in particular newstream setups, in order to create legitimacy and trust towards the processes.

## 7. Conclusions

*This thesis set out to, with Ericsson as the host firm, perform a comparative study on large firms' efforts to manage and stimulate idea implementation as a part of the innovation process, in order to understand what hinders or enables creative ideas to make it into further development. To achieve this, a comparative study with three large participating firms has been performed: Ericsson, Volvo Cars and Hilti.*

We argue that the current practices of treating the full spectrum of the term when investigating innovation may be useful for strategizing within the field at higher hierarchical levels, but be contra-productive for the execution of the innovative activities at lower operational levels. This argument is supported by findings where we have identified what may be perceived as clear discrepancies in perceptions of the topic of innovation between different organizational levels. These discrepancies have in some cases been described as barriers between middle management's and lower, operational, hierarchies' perceptions and understandings.

Consequently, it is our belief that the burden of interpreting the firm's strategies within the vast field of innovation cannot, and should consequently not, be put on the middle manager. Unfortunately, however, this appears to be the case within many large firms today, perhaps as an outcome of the rather broad treatment of the term innovation within current research on innovation management, making firms' visions and strategies towards innovation hard to align across firms' organizational levels. As we have shown, setups for, and encouragement of, the production of innovation without the right knowledge at the operational levels, is more likely to act more demotivating than encouraging.

As illustrated in figure 13, this study has identified four interconnected factors as key for successful management and stimulation of idea implementation within large firms. The results show that the three of the factors lie on a personal level, whereas the fourth lies at an organizational level. The first factor, clarity of purpose can be obtained through the establishment of a vision and strategy for innovation which needs to be clearly communicated and understood throughout the firm's organizational layers. This vision should preferably include stretch goals for innovation, which has been identified to act incentivizing for employees to drive ideas - given the conditions that the other three factors exist.

The second factor, identified as the ability to anticipate, and plan for, the idea evaluation, has been identified as important as the study has found that a lack of ability to anticipate a possible evaluation of the idea may cause demotivation towards proceeding as an idea provider. This factor can be achieved through motivation, right values and track records of such practices. The third factor, also analyzed on a personal level, has been identified as the ability to do the right networking with the purpose of driving ideas through the organization. Lastly, and at a higher organizational level, we have seen that there needs to be practical structures in place (such as processes and other setups).

To summarize, large firms that manage and stimulate idea implementation establish a vision towards innovation. This vision is clearly aligned with a strategy for execution of the vision. The strategy is diffused through the organization layers, with the purpose to make it a part of people's mindsets, direct the organization's attention and thereby effectivize the process of idea implementation. Structures and setups for realizing the strategy are established (preferably with a distinction between the production of oldstream and newstream innovation)

## 7. Conclusions

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and, finally, firms build trust in such structures and setups through anchoring in higher management and establishment of good examples.



## 8. Recommendations

### 8.1 Recommendations for Ericsson's Packet Core

First and foremost, Ericsson's Packet Core is recommended to clarify its vision towards innovation as discrepancies were noted with regard to the interviewees' perceptions of the organization's vision towards innovation. For example, does Packet Core aim to be a so called executor of incremental improvement consistent with the existing product line, or an enabler of radical innovation? The cases of Volvo Cars, where the vision appears to be to encourage and capture creativity related to all degrees of novelty from within the firm, and Hilti, where Corporate Research and Development play a more decisive role in creative endeavors, suggest that firms' visions towards innovation come in many formats. Still, a clear vision for the production of innovative outcomes is considered to be beneficial in directing the organization's attention, and thereby increasing the efficiency of idea implementation.

The vision for innovation further needs to be aligned with a strategy. If Packet Core for example aims to be an enabler of radical innovation, formulation of cross-organizational structures and setups is recommended. Inspiration for such structures and setups can be found in firms such as Volvo Cars and Hilti. Furthermore, the research has pointed out that a strategy is only useful if understood and communicated to everyone. Here, Packet Core can in particular gain inspiration from Hilti, where the firm's strategy for innovation is highly diffused throughout the organization. Lastly, without trust in the official processes and structures, they will not be used. The study has shown that recognition can be achieved through good examples and anchoring in higher management. Packet Core is therefore recommended to work on building trust in the structures and processes created for promoting innovation.

### 8.2 Implications for future research

This research has identified tendencies of high degrees of inconsistencies regarding the interpretation of the word innovation, both across firms' different hierarchical levels but also within research. We suggest that there is a need for emphasizing a breakdown of the field innovation management into specific subfields of the innovation process, degrees of novelty, as well as different types of innovation. Only in this way can we gain clearer understanding of what it actually means to manage innovation. This breakdown is considered to be particularly necessary for the phase following ideation in the innovation process, which in this thesis has been referred to as idea implementation. Future research on management of the transfer phase between ideation and design and development of ideas within large firms is thus welcomed.

Based on the findings, we also believe that the term innovation may be mishandled in business today, and we propose that there is an urgent need for researchers, as well as for firms, to investigate pertinent interpretation of the term innovation and also the management of it. This is extra relevant for the phase of idea implementation, and for its management across different hierarchical levels, in order to enable efficient diffusion of the strategy for innovation.

As illustrated in figure 13, a point of tension has been identified within the management of idea implementation, between management at a higher, organizational, level and at the individual level. Our research shows that a cause to this problem may lie in the interpretation

## 8. Recommendations

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of the terms related to innovation, which appears to be imprecise, and in the fact that practices for management of idea implementation often appear to be poorly understood and diffused throughout the organizational layers. Through our research we have made an attempt to address the dynamics behind this tension, but we also acknowledge that the focus has been on a relatively high organizational level. Therefore, we recommend future researchers to complement our systems analysis with a people analysis, for example through mappings of the tensions between personality characteristics within the firms, and the firms' strategies for driving ideas.

Furthermore, considering the large amounts of researchers who have stressed the importance of treating the concept of innovation capabilities as an interrelated system, it is surprising how little research has been made on developing frameworks for exploring the system dynamics behind the building blocks of innovation capabilities. We have hopefully made a contribution to this gap through a suggestion for a model illustrating the system dynamics behind the three participating firms' efforts to manage and stimulate idea implementation, but we also acknowledge that our proposed model can, and should, be further validated and improved.

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# Appendix

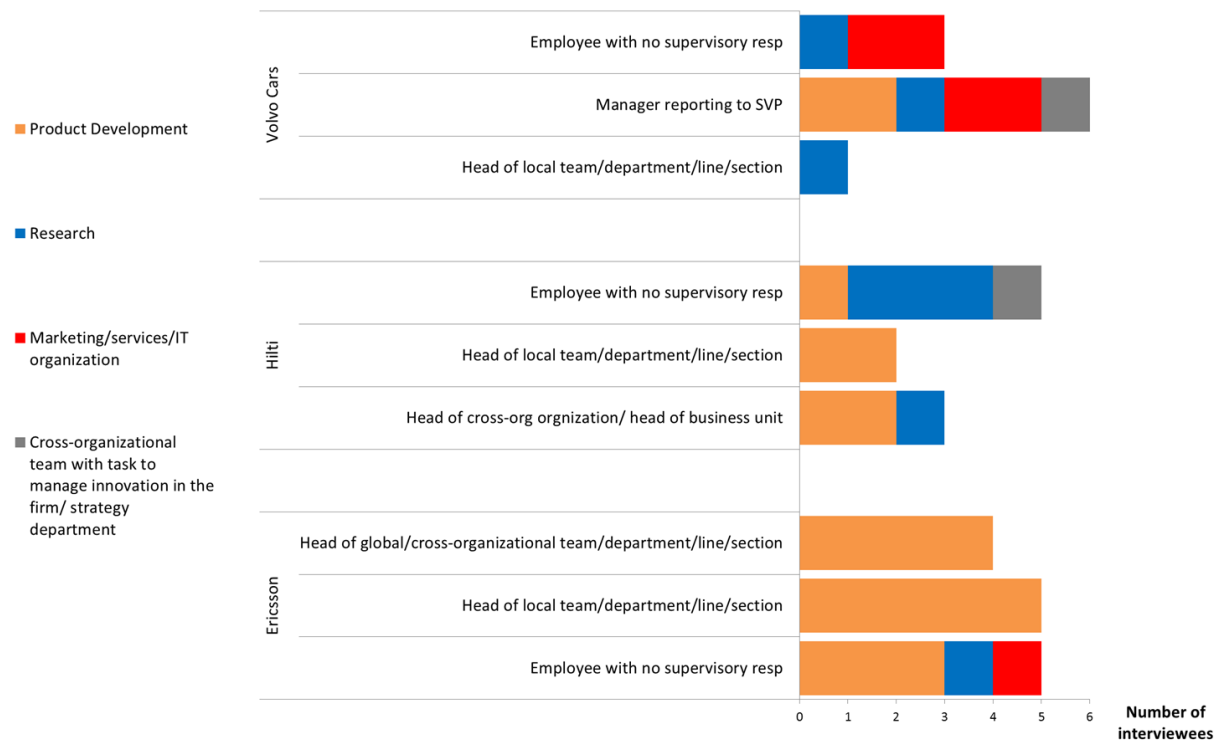
## Appendix 1. Candidates and resulting firms participating in the comparative study

NAME OF THE FIRM	MARKET VALUE (\$ billion) as of May 2015 (Forbes, 2015, if nothing else mentioned)
Ericsson	42.1
SKF	12
H&M	67.8
Atlas Copco	39.5
SCA	16.7
Telia	27.8
Volvo Cars	Unlisted, - around 28.000 employees (Volvo Cars, 2015)
Skanska	9.7
Sandvik	13.9
Spotify	Unlisted - 9 billion valuation (Davidson, 2015)
Hilti	Unlisted - around 22.000 employees (Hilti, 2014)
Tetra Pak	Unlisted - around 23.500 employees (Tetra Pak, 2015)

↓ *Participating  
firms*

NAME OF THE FIRM	NUMBER OF EMPLOYEES
Ericsson	42.1 (Ericsson, 2015 D)
Volvo Cars	Unlisted, - around 28.000 employees (Volvo Cars, 2015)
Hilti	Unlisted - around 22.000 employees (Hilti, 2014)

## Appendix 2. Characteristics of interviewees participating in the multi-firm study



## Appendix 3. Data collection

### 3.1 Interview information and framework

As someone currently involved in Tetra Pak's innovation endeavors, we would greatly appreciate approximately 15 minutes of your time to respond to the enclosed questionnaire.

#### Short about the study

The overall aim of the research is to perform a multi-firm study on large firms in order to explore innovation capabilities from a middle management perspective. A specific focus is put on idea implementation: what hinders or enables ideas and concepts that are different or more innovative to actually make it into further development. By providing all participant firms information about the key characteristics shaping different firms' innovation capabilities, value in the form of a benchmark will be provided to all participant firms.

Relevant employees from each firm will participate in an interview and/or answer a questionnaire. The following firms are participating in the study:

- Ericsson
- Hilti
- Tetra Pak
- Volvo Cars
- NCC

### **Anonymity**

- We offer complete anonymity to the individuals and will not publish any material where individuals can be identified.
- We will not publish any papers based only on one company, but it will be the aggregated results from all cases and interviews in the study.
- Information gathered in the interview in the form of recording will only be shared within the research team.

### **About the interview**

The interview will be an hour long, consisting of semi-structured questions. There might be some overlap with the questions depending on how the answer is provided. We encourage participants to provide examples whenever possible. We might interrupt if the interviewee diverges too far from the question set. Please clarify the questions or the context with us whenever necessary and feel free to decline the question if needed.

### **Researchers**

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### **Time : One hour**

**probable questions : 8 - 10**

### **Structure and Management**

1. What is your title?
2. Can you tell us about your background and your responsibilities?
3. Tell us about your department/function/team.

### **Strategy**

4. Does X aim at being an innovation leader in its industry?
5. Do you have a strategy to encourage all employees to focus on being innovative? Do you think it's working well for you?

### **Ways of working**

6. Can you tell us how innovation happens in your firm.
  - a. What is your role in the innovation process?
  - b. Can you give us an example on a situation when you faced a challenge in progressing with an idea?
  - c. Can you give us an example on when you succeeded in progressing forward with an idea?

7. How are new ideas assessed in your working place? Can you give me an example?
  - a. For major innovations?
  - b. For minor innovations?

*Pay extra attention to group/departmental/functional barriers  
Pay attention to the processes, if they are creative or structured*

### **Culture**

8. How does the senior management spend time and attention on the innovation activities?
9. How is negative feedback regarding new ideas communicated? Is it private, respectful, and focused on improvement, or negative and embarrassing? Can you give us an example?

*Related to: How does the firm treat failures and mistakes in the innovation process?*

### **Resources**

10. Can you briefly explain the resource base of your team and the support you get from organization to develop new ideas?
11. Can you give us an example on a situation where you needed resources for progressing an idea? Difficulties/successes?

### **Question related to Resources/Culture**

12. Have your ever won an award or been recognized as the best in something? (most innovative, best employer, highest customer retention or best exporter) If yes, Can you explain briefly why and how you got the honor? If not, can you tell about another case where innovative initiatives have been awarded?

### **Extra questions if time permits**

- Except for sensitive information, do people know what's going on with the latest ideas?
- How do the employees use their slack in either money or time?
- How do employees get funding to spend on innovative projects? Please elaborate on the procedure to request for additional resources.

## 3.2 The questionnaire



### A Comparative Study on Large Firms' Efforts to Manage and Stimulate Innovation

#### Questionnaire Information:

We are two students from Chalmers University currently pursuing our master thesis and we met you a few weeks back for an interview on the research topic 'A Comparative Study on Large Firms' Efforts to Manage and Stimulate Innovation'. As a participant in our study, we would greatly appreciate if you could take approximately 10 minutes of your time to respond to the enclosed questionnaire. The purpose of the questionnaire is to complement the interview for clarification and comparative purposes. The questionnaire will be sent to all participants in the study.

#### Short information about the study:

The overall aim of the research is to perform a multi-firm study on large firms in order to explore innovation capabilities from a middle management perspective. A specific focus is put on idea implementation: What hinders or enables ideas and concepts to actually make it into further development?

The study involves the use of interviews and questionnaires to:

- 1) Gain an understanding of idea implementation at large firms
- 2) Assess innovation practices at all participating firms for a comparative study.

Relevant employees from each firm will participate in an interview and/or answer a questionnaire. The following firms are participating in the study:

Ericsson (host firm)  
Volvo Cars  
Tetra Pak  
Hilti

Would you be interested in the final result, we will gladly share the thesis with you once it is finalized.

#### Anonymity:

- We offer complete anonymity to the individuals and will not publish any material where individuals can be identified.
- We will not publish any papers based only on one company, but it will be the aggregated results from all cases and interviews in the study.

#### How to answer the questionnaire:

Please answer all the questions in such a way that they reflect most clearly your opinion. The questions will require you to pick the option that best suits your response. Please do not leave blanks.

We thank you for your contribution to our research.

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\*Obligatorisk



**Name \***

We will not disclose names or any personal information in our report. This information is solely to identify and analyse patterns between employees at various levels in a firm

**Position \***

**1. How would you define your unit/department in the organization? \***

For example: 'R&D', 'marketing', 'production', 'strategy', 'cross-functional team' etc.

## Scale information

The following section will require you to select a response between a scale of 1 to 5 where 1 means 'NEVER' and 5 means 'ALWAYS'

**2. To what extent is middle management involved in developing ideas (e.g. in brainstorming sessions)? \***

Middle-level managers differ from the lower-level managers by being removed from the operating work. These managers usually spend more time with their superiors than with people performing the operational tasks, causing them to develop stronger upward orientation than the first-level supervisors.

1 2 3 4 5

Never      Always

**3. To what extent do you interact with higher management in developing ideas (e.g. in decision-making meetings)? \***

In the context of this study, heads of business units and above (for example Senior Vice Presidents) is considered as higher management.

1 2 3 4 5

Never      Always

## Scale change information

The following section will require you to select a response between a scale of 1 to 5 where 1 means 'Strongly disagree' and 5 means 'Strongly agree'.

**4. I fully understand the direction in which the firm is heading regarding innovation. \***

Innovation is defined as a novelty that creates value for the firm. It can be viewed as the application of better solutions that meet new requirements, unarticulated needs, or existing market needs.

1 2 3 4 5

Strongly disagree      Strongly agree

**5. I am aware of my role in the company's strategy towards innovation \***

For a definition of innovation, see question 4.

1 2 3 4 5

Strongly disagree      Strongly agree

**6. My firm has a proactive vision to be an innovative actor in its industry \***

This can be put in contrast to a firm that is a follower of new trends/behaviors/solutions in the industry.

1 2 3 4 5

Strongly disagree      Strongly agree

**7. My firm has a clear vision and strategy towards innovation \***

For a definition of innovation, see question 4.

1 2 3 4 5

Strongly disagree      Strongly agree

**8. There are clear boundaries for what growth opportunities the firm will pursue \***

1 2 3 4 5

Strongly disagree      Strongly agree

**9. In my everyday work I am encouraged to come up with ideas**

1 2 3 4 5

Strongly disagree      Strongly agree

10. I know how to push small/incremental ideas (both others' and my ideas) forward towards further development \*

1 2 3 4 5

Strongly disagree      Strongly agree

11. I am able to mobilize support in order to improve the odds for developing incremental ideas (as in minor upgrades to existing solutions) \*

That is, you are able to mobilize support either through personal networks or with management support.

1 2 3 4 5

Strongly disagree      Strongly agree

12. I know how to push bigger/more radical ideas (both others' and my ideas) forward towards further development \*

1 2 3 4 5

Strongly disagree      Strongly agree

13. I am able to mobilize support in order to improve the odds for developing radical ideas (as in a major transformation from existing solutions) \*

That is, you are able to mobilize support either through personal networks or with management support.

1 2 3 4 5

Strongly disagree      Strongly agree

14. I have incentives for pushing ideas forward \*

Incentives can include acknowledgement, rewards, awards, bonus, promotion or any other special recognition.

1 2 3 4 5

Strongly disagree      Strongly agree

15. The firm uses financial calculations to assess early ideas \*

1 2 3 4 5

Strongly disagree      Strongly agree

16. Barriers between idea generation and successful implementation exist due to organisational boundaries such as business units, departments, group functions \*

1 2 3 4 5

Strongly disagree      Strongly agree

17. There is support from the organization to help idea generators to understand the commercial opportunities for an idea \*

E.g. through getting market and business expertise in the early stage of an idea if required

1 2 3 4 5

Strongly disagree      Strongly agree

18. In the early phase of the innovation process, my team is able to generate, communicate and act on the most relevant, up-to-date information available about our customers

i.e. Ability to interact with customers to assess early ideas.

1 2 3 4 5

Strongly disagree      Strongly agree

19. In the early phase of the innovation process, my team is able to generate, communicate and act on the most relevant, up-to-date information available about our competitors

i.e. Ability to know the competitors' activities with respect to innovation.

1 2 3 4 5

Strongly disagree      Strongly agree

20. There are special activities to promote teamwork \*

1 2 3 4 5

Strongly disagree      Strongly agree

21. Everyone is encouraged to participate in discussions and have dissenting opinions \*

1 2 3 4 5

Strongly disagree      Strongly agree

**22. Senior management works to develop an innovation supportive organizational culture \***

For example through idea jams, hackathons, seminars, workshops etc. For a definition of innovation, see question 4.

1 2 3 4 5

Strongly disagree      Strongly agree**23. There is internal competition between departments when it comes to innovation \***

Departmental silos can prevent ideas from moving forwards especially if the idea is cross-functional and involves support/resource from multiple departments. For a definition of innovation, see question 4.

1 2 3 4 5

Strongly disagree      Strongly agree**24. When it comes to sharing early stage ideas, people are careful with what they express to decision makers \***

1 2 3 4 5

Strongly disagree      Strongly agree**25. Employees who participate in failed innovation endeavours are criticized within our firm \***

Failed innovation endeavours are primarily innovations that don't meet company internal expectations. For a definition of innovation, see question 4.

1 2 3 4 5

Strongly disagree      Strongly agree**26. There is a climate of transparency and openness with sharing information about failure \***

1 2 3 4 5

Strongly disagree      Strongly agree**27. Managers in charge of developing breakthrough ideas are able to work under conditions of market and/or business uncertainty \***

1 2 3 4 5

Strongly disagree      Strongly agree**28. Resources to engage in prototyping or proof of concept are readily available \***

1 2 3 4 5

Strongly disagree      Strongly agree

Skicka

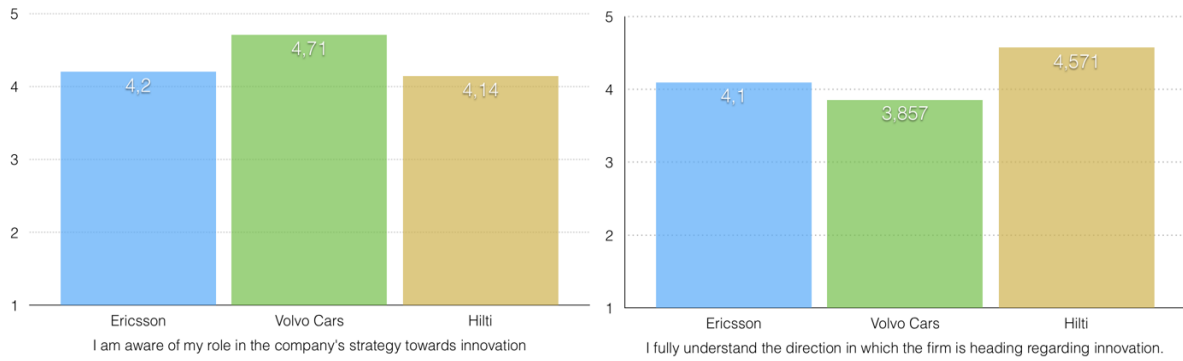
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100 %: Du är klar.

### 3.3 Excerpt of questionnaire findings

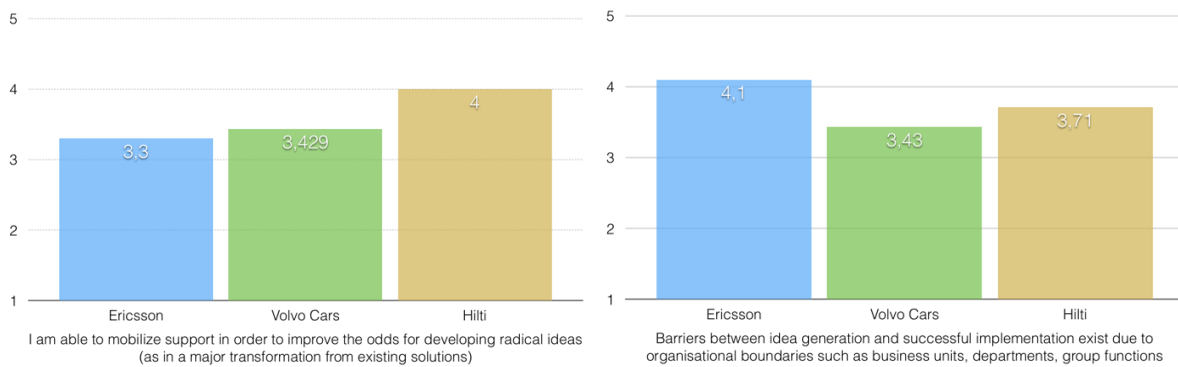
#### *Innovation strategy and vision*

In the following graphs, employees responded on their awareness about their firm's innovation strategy and the awareness of their role in their company's strategy towards innovation.



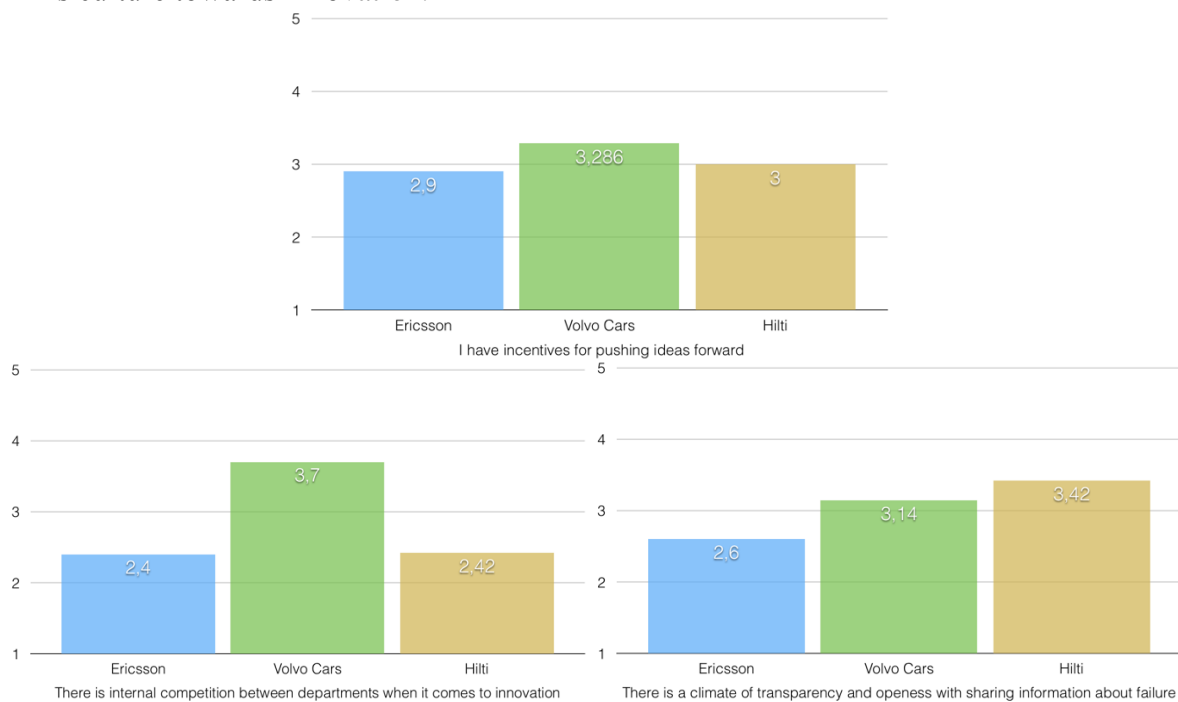
**Organizational structure**

The following graphs display perceptions of the level of organizational barriers within each firm as per the employees participating in the interviews.



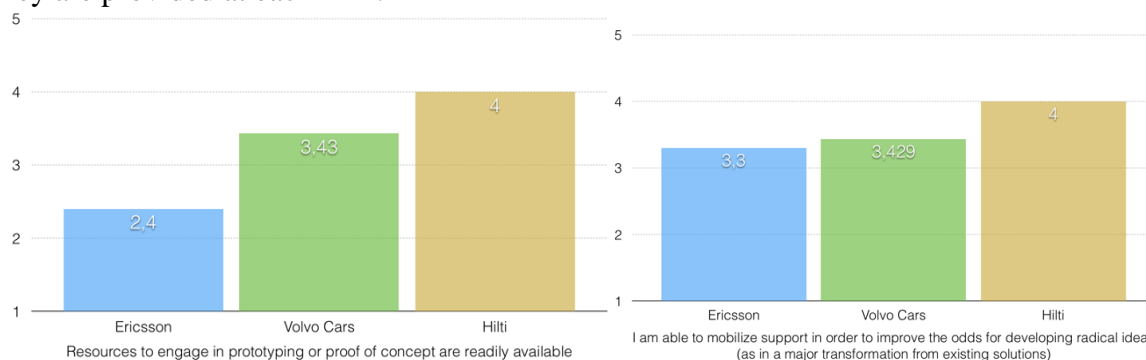
**Corporate culture**

The following graphs provide a picture of how each employees perceives the culture towards innovation in their firm. As discussed in the literature review section; incentives, competition or rivalry, transparency or openness with sharing failure are some of the key indicators of a firm's culture towards innovation.



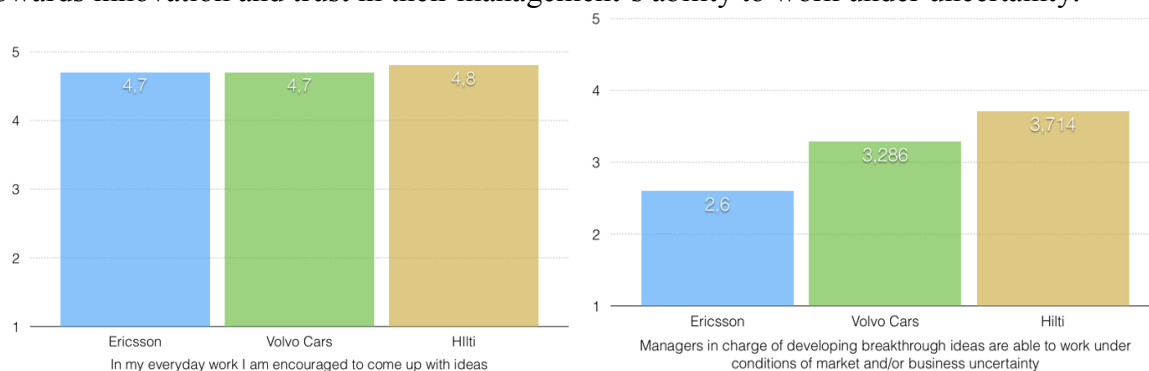
**Resources**

The following graphs provide an indication of the level of resources ideators perceive that they are provided at each firm.



**Ways of working**

The following figure provides an indication of employees' perception of encouragement towards innovation and trust in their management's ability to work under uncertainty.

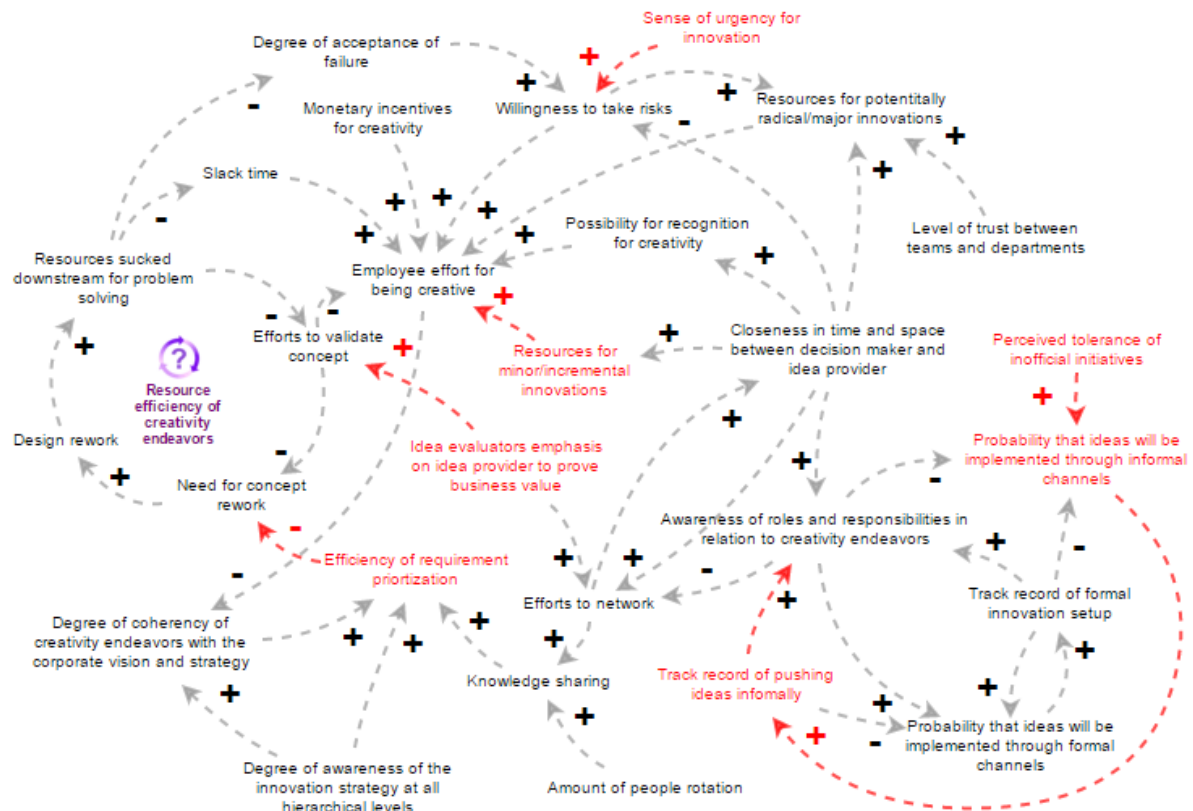


# Appendix 4. Comparative table on key insights from each of the firms

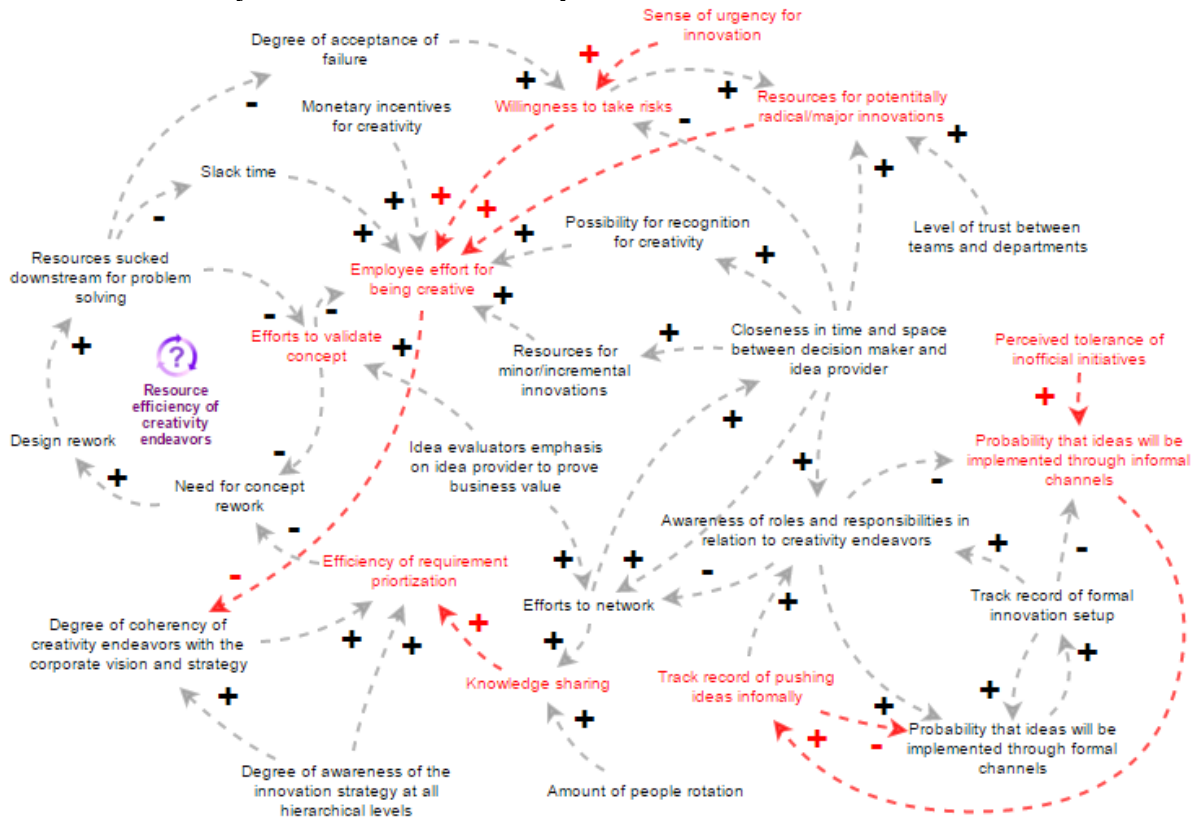
	Ericsson, PDU Packet Core	Volvo Cars	Hilti
INNOVATION STRATEGY AND VISION	<ul style="list-style-type: none"> <li>Interviewees tended to highlight the firm's long heritage of innovation and standard creation. They also tended to point out the fact that higher management talks much about the importance of innovation.</li> <li>PDU Packet Core works on building innovation capabilities, through management education, team building activities and more.</li> <li>Most people were aware of the corp vision and strategy: improving existing products while focusing on cloud and virtualization.</li> <li>Several departments provide support and structures for idea providers. However, none of these are targeting radical innovation.</li> </ul>	<ul style="list-style-type: none"> <li>Most employees appeared as enthusiastic about Volvo Cars position as an innovation leader in its industry.</li> <li>Interviewees noted a clear management push towards creativity, rather than baseline profits. In recent time.</li> <li>Several interviewees struggled with describing Volvo Cars' vision further than the areas safety, connectivity and brand strength.</li> <li>Otherwise, interviewees thought that each department has its own strategy for how, and in which direction, to innovate.</li> </ul>	<ul style="list-style-type: none"> <li>Most interviewees described and related Hilti's goals for innovation to the corporate strategy's goals of differentiation.</li> <li>Innovation was perceived as the means to fulfill the differentiation strategy.</li> <li>Overall a high degree of focus on the core business, hardware + software, at most hierarchical levels.</li> <li>Most interviewees believe that the Corporate Research and Technology (CR&amp;T) are the ones responsible for creativity in the firm.</li> <li>Apart from the work in CR&amp;T, there are some business unit specific initiatives for creativity.</li> </ul>
ORGANIZATIONAL STRUCTURES	<ul style="list-style-type: none"> <li>Packet Core has no official structures to handle radical innovation.</li> <li>Packet Core's innovation team is a competence hub.</li> <li>Product management is looking at proven and existing product lines whereas, R&amp;D is looking into long term research. According to product management, they should have long term vision but in practice this is hard to achieve.</li> <li>The whole org. is structured in a waterfall manner, enabling clarification of job resp. Several interviewees believe that creativity therefore is easier to drive top down than bottom up.</li> <li>Secretive, under the table projects are described as a possibility, and something that is relatively frequently occurring.</li> </ul>	<ul style="list-style-type: none"> <li>Two cross-organizational setups for innovation: one is supporting creativity and the other has the role to produce radical innovations. Both are supported from top management levels.</li> <li>However, ideas from these need to be fed back to the ordinary organization.</li> <li>The two innovation structures may have recognition problems from the rest of the organization.</li> <li>Entire organization is located at one geographic level, enabling networking and communication across silos.</li> <li>Still, silo barriers are described as rigid and decision-makers are not easily identifiable by staff.</li> </ul>	<ul style="list-style-type: none"> <li>The firm's creativity endeavors are described as focused to CR&amp;T, while the business units are believed to be more focused on execution.</li> <li>CR&amp;T is believed to primarily focus on creativity related to product innovations.</li> <li>The org. structure is relatively flat, contributing to a proximity to decision makers.</li> <li>Employees have a very good knowledge of where decision makers are and the possible forums for getting in touch with them.</li> <li>There is an apparent sense of competition between the business units.</li> </ul>
RESOURCES	<ul style="list-style-type: none"> <li>All products at Ericsson have a product owner who holds the budget for their respective product. This ensures clarity in decision making for resource allocation.</li> <li>Hackathons are important resources for collaborating and creativity on a site level.</li> <li>The innovation team is an unofficial team without resources. Also, it has no mandate to change processes or setups.</li> <li>The experimentation week from ideas box is provided only to the idea provider, not a team.</li> <li>It is often important to project ideas on a large stage in order to get management support. But since deciding management levels are distanced from operations, reaching this contact may be difficult.</li> </ul>	<ul style="list-style-type: none"> <li>The independent team with the task of performing radical innovation has its own budget and is therefore independent. The supporting team is not.</li> <li>The supporting innovation organization provides time and guidance for idea implementation. However, the track record of their activities is poor.</li> <li>The existing processes and setups dedicated to innovation are sometimes perceived as inefficient.</li> <li>Car-centered processes are described as an obstacle for resource allocation to ideas related to other types of innovation.</li> <li>Resources for project initiation requires anchoring at high levels, which in turn drives networking for attaining resources for idea implementation.</li> </ul>	<ul style="list-style-type: none"> <li>In CR&amp;T, 10% of employees' time is supposed to be spent on creativity. In the business units people have considerably less time for creativity.</li> <li>CR&amp;T and business units often negotiate over resources for idea exploration.</li> <li>High employee rotation and poor info sharing between business units may cause information to get lost.</li> <li>Due to a flat structure and clear processes, decision makers can be easily approachable and identifiable.</li> <li>Although decision making is described as mostly being transparent, the basis of the decision making for handover of ideas from CR&amp;T to business units is described as somewhat unclear at operational levels.</li> </ul>
CULTURE	<ul style="list-style-type: none"> <li>Little collaboration between business units due to fear of 'stepping on toes', - intruding into other responsibility areas and product lines.</li> <li>Interviewees mentioned secretive projects on a grass root initiative.</li> <li>Ideas submitted through formal channels are described as rarely being executed - signs of distrust towards such processes.</li> <li>Employees regard innovation as big changes while middle and higher management regard innovation as both incremental and radical change.</li> <li>Managers are more confident when explaining their role in innovation than employees' operational levels.</li> <li>Interviewees perceive that it is difficult to be open about failures.</li> <li>Little people rotation between departments and units.</li> </ul>	<ul style="list-style-type: none"> <li>Employees are not afraid of expressing their opinions; there are many bold personalities within the firm.</li> <li>Much emphasis on consensus for letting ideas develop further; employees often fear their creativity will intrude on other's responsibility areas.</li> <li>Much focus is given on market trends in the early stage of ideas, reflected by the fact the it is described as difficult to sell in ideas to other functional silos.</li> <li>Failures are often discussed in different meetings and forums.</li> <li>Current firm image of being an innovation leader creates enthusiasm.</li> <li>Much emphasis on staff diversity in relation to innovation.</li> </ul>	<ul style="list-style-type: none"> <li>A strong culture of anchoring and networking for preparation of ideas before the formal "assessments" in the business units. CR&amp;T works on minimizing such barriers.</li> <li>Due to high degree of management attendance in meetings etc., and high demands on the presentation material, taking risks or displaying failure here may be avoided in such forums.</li> <li>A clear push for entrepreneurship from the top management. Failure is usually considered as not trying.</li> <li>Within CR&amp;T, performance is evaluated based on result and creativity. In the business units, performance is rarely evaluated based on creativity.</li> <li>The chance to get recognition is widely considered the greatest motivation for creativity.</li> </ul>
WAYS OF WORKING	<ul style="list-style-type: none"> <li>The official idea funnel does not have a proven track record.</li> <li>Although idea box meetings are happening weekly, not many are aware of them, nor of who is attending them.</li> <li>Most ideas are assessed based on business case and ROI. Managers stress the importance of assessing radical ideas through simpler business cases, so called uniformal skunk works (or "under the table projects") are said to be undertaken all over the Ericsson Gothenburg site.</li> <li>Manager tend to speak confidently speak about their role in supporting innovative ideas towards implementation.</li> <li>There is not much culture of bringing up ideas after they have once been disapproved by management.</li> </ul>	<ul style="list-style-type: none"> <li>There are formal process championed by VPs and SVPs to implement radical ideas. The awareness of these is limited however.</li> <li>Many have limited knowledge of the work of the cross-organizational, innovating, team. Also, there are no processes for handover of their ideas to the standardized processes.</li> <li>Many functions/units own formal processes for handling ideas, often including phases for management reviews.</li> <li>Meetings are usually open for anyone to attend, with floating attendants.</li> <li>Employees have good knowledge about Volvo Cars' customers.</li> <li>The process-centered way of working with ideas may be perceived as rigid and thus discouraging.</li> </ul>	<ul style="list-style-type: none"> <li>High degree of awareness of, and knowledge about, the standardized corporate processes. Also a high level of trust in the processes, common that employees refer to them in discussions about creativity.</li> <li>Interviewees consistently mention two types of regular meetings, both in CR&amp;T and one in the business units, as opportunities for presenting ideas. CR&amp;T has an ideation process, with systematic and clear management, and with involvement of high-level management.</li> <li>Difficult to progress with ideas without proven business value.</li> <li>Little transparency in the way in which ideas are transferred fro CR&amp;T to business units.</li> <li>Ideas are commonly revived after some time.</li> </ul>

## Appendix 5. Differences in the system dynamics behind idea implementation within the firms

### 5.1 Ericsson Packet Core's dynamics behind idea implementation



### 5.2 Volvo Cars' dynamics behind idea implementation



### 5.3 Hilti's dynamics behind idea implementation

