Innovation Capabilities
Teams’ perception of strengths and critical gaps

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Innovation Capabilities – Teams’ perception of strengths and critical gaps

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Abstract

To be competitive, firms must constantly introduce new and better products and services. Thus it is crucial for firms to create an organization in which both incremental and radical innovations occur. In an organizational context, innovation capability refers to the capability to integrate the key resources and capabilities of the organization in a way that stimulates innovation in products, services and processes. Consequently, firms must support the underlying processes and practices that aim at improving the innovation capability. To provide the necessary support for innovation activities, firms must also consider the conditions of each specific team, as the support needed depends on the situation in the respective teams.

This study was performed as a Master thesis project at The Royal Institute of Technology. It is based on an empirical study performed at a large Swedish firm during 2012. The purpose of the study was to investigate and map how teams within the firm perceive their innovation capability. The sample consisted of around 200 respondents in 13 different teams. The teams were from two different product units, and were located in five different countries. To collect data about the teams included in the survey, a web-based survey tool was developed. In the survey, respondents got to choose three capabilities they perceived as strengths of the team, and three they perceived as gaps critical to address. Complementary interviews were also held with members of the studied teams to further discuss the survey results. By using this approach, the perceived strengths and critical gaps of each team was identified.

The results show that at an overall level there are great similarities between the different teams, as some capabilities were perceived as top three strengths in a majority of the teams. Looking at the critical gaps the responses were more evenly distributed, although some capabilities still scored significantly higher than others. No major differences were found between different product units or countries. One important finding was that within each team, there were great differences in how the team members perceived their team’s strengths and critical gaps. This implicates that the teams need to become more consistent on these issues, as an effective change work depends on a mutual understanding of the needs of the team.
Sammanfattning

För att vara konkurrenskraftiga måste företag ständigt producera nya och bättre produkter och tjänster. Därför är det viktigt för företag att skapa en organisation där både inkrementella och radikala innovationer kan genereras. Ur ett organisationsperspektiv innebär innovationsförmåga att kunna integrera organisationens resurser och förmågor på ett sådant sätt att det stimulerar innovation i företagets produkter, tjänster och processer. Därmed måste företag stödja de processer och rutiner som syftar till att öka innovationsförmågan. För att kunna ge det nödvändiga stödet till innovationsaktiviteter måste företag också iaktta varje teams specifika behov, eftersom respektive team kan ha vitt skilda behov.


De övergripande resultaten visar att det finns stora likheter mellan de olika teamen, eftersom vissa förmågor uppfattades som en av de tre största styrkorna i en majoritet av teamen. Sett till förbättringsområdena var svaren jämnhare fördelade över svarsalternativen, även om några valdes av en väsentligt större andel av respondenterna. Inga större skillnader mellan de olika produktutvecklingsenheter eller länderna hittades. Däremot framgick att det inom varje team var stor skillnad mellan de olika medlemmarnas uppfattning av styrkor och förbättringsområden. Detta antyder att teamen måste bli mer eniga angående detta, eftersom ett förändringsarbete blir effektivare om teammedlemmarna har en gemensam uppfattning om teamets behov.
ACKNOWLEDGEMENTS

There are some people who have been very important for this Master thesis project by helping and inspiring throughout the process. In this chapter the authors of this Master thesis would like to acknowledge them.

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The authors would also like to thank the firm where the empirical study was performed. We would especially like to thank all respondents and of course the supervisor from the firm who always challenged the authors to take it to the next level.

Last, but definitely not least, we would like to acknowledge our academic supervisor, Sofia Ritzén, who have been very supportive during the Master thesis project and always assisted with methodology and theory.

Valérie Pedersén and Axel Wadensten

Stockholm, November, 2012
This chapter aims to describe the Abbreviations used in this Master thesis report.

**Abbreviations**

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<th>Description</th>
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<tbody>
<tr>
<td>IC</td>
<td>Innovation Challenge</td>
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<tr>
<td>PU</td>
<td>Product Unit</td>
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1 INTRODUCTION

This chapter aims to describe the background, purpose and limitations used during this Master thesis project.

1.1 Background

To keep up with the pace of today's fast changing world of competitiveness, it has never been more important for firms to constantly improve existing products and services as well as exceeding competitors at new product development. Firms who fail at achieving this tend to disappear and leave room for other firms who are better suited for the existing competitive climate. Thus it is critical for companies to create an organization where innovations, both incremental and radical, can take place (McDermott & O’Connor 2002).

There are several methods and theories regarding how firms can foster innovation and there are numerous suggestions and recommendations of which activities that should be carried out. However, one important aspect when creating a corporate climate where innovations are more likely to occur is the support of underlying processes and practices within the organization that aims at increasing innovation capability (Lawson & Samson 2001; Tidd et al 2001).

In an organizational context, innovation capability refers to the capability to integrate the key resources and capabilities of the organization in a way that stimulates innovation in products, services and processes (Ritzén & Nilsson 2011). Innovation management can be described as taking a strategic approach to innovation and thereby refining, adapting and deploying the firms resources and capabilities in a coordinated way, with the aim to create and sustain innovation capability (Tidd et al 2001; Goffin & Mitchell 2010). Thus it can be seen as a way of integrating changes in technology and markets and within the organization (Tidd et al 2001).

As innovation management is about adapting to changes, change work is an essential part of creating and sustaining innovation capability. There are many important factors for successfully implementing organizational changes. Some examples are active participation in the planning of the changes by those affected by the changes (Wilson 2004), having a shared understanding of the reasons for the changes and a shared vision of the desired outcomes, as well as having established a sense of urgency for the changes taking place (Kotter 1995). An individual’s perception of the system in which he or she is operating and its expected behavior is referred to as a ‘mental model’ (Holyoak 1984). When performing change work in teams, the mental models of the team members are important. This as it has a great influence on how the individuals interpret and interact with their surrounding (Kim 1993), and in order for a team to have a shared approach to its tasks and procedures, and thereby also a shared understanding for the changes needed, there must be an overlap between the mental models of the team members (Druskat & Pescosolido 2002).

1.2 Problem description

The Master thesis was performed at a firm that is aiming to improve its innovation capability. The firm has created a set of tools that teams that are striving towards improving their innovation capability can use. One of the tools is a workshop where the outcome is an action plan for improving innovation capability. By setting up actions with measurable targets, the team can follow up on their progress. The workshop was recently deployed at the company, thus not many teams have performed it yet. In order to be able to evaluate the methodology as a whole in the future, there is a need for mapping teams current perception of their team’s innovation capability strengths and critical gaps. At the present time the firm does not know what teams consider being their strengths and their critical gaps, the last-mentioned referring to critical areas to improve. By
comparing this study with a future situational analysis of teams using the methodology, conclusions regarding the effectiveness of the tools can be made.

1.3 Purpose
The purpose of this Master thesis is to investigate and map the teams current perception of their team’s strengths and critical gaps, in regards to innovation capability. This is important for the firm in question, as they until now do not know how these teams perceive their innovation capability. Furthermore, it is important to know the current state so that an evaluation of the tools and methods can be made in the future.

1.3.1 Goal
The following sentence clarifies the goal of the Master thesis;

The goal is to identify and explain patterns observed in the studied teams and thus be able to give recommendations not only to the studied firm but also firms in general that are aiming towards improving the innovation capability of their teams.

1.4 Delimitations & Constraints
Some delimitation have been made in this Master thesis project. Firstly the empirical study was constrained to only two different product units of the firm, as it would not be possible to include all units of the large firm.

Secondly due to resource availability the firm could only include around 400 employees in the survey. Therefore a maximum of 8 teams in each unit were asked, but practically every member of the chosen teams. This enabled a discussion about the opinion of each team, rather than teams in a specific region or unit. Lastly the innovation performance itself was not measured; instead the employees’ perception of their innovation capability was measured.
1.5 Outline

Presented below is the outline of the Master thesis report where the different modules have been included, see Figure 1.

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*Figure 1. The outline of the Master thesis report.*
2 THEORETICAL FRAMEWORK

This chapter presents the theoretical framework, which have been used during this study. The chapter aims to increase the reader’s understanding of Innovation Capability, Innovation Management, Teams and Leaders in Change Work, Mental Models as well as Team Assessment.

2.1 Innovation

Several definitions of innovation have been developed throughout the years. Additionally, different organizations and individuals are likely to have differing views on how innovations are created (Goffin & Mitchell 2010). Adams et al (2006) argues that the term ‘innovation’ lacks a clear definition, and consequently is hard to study and measure. Despite this criticism regarding the ambiguity of innovation, it is an essential part of today’s business organizations, as many consider a firms innovation capability to be the base of organizational survival (Cavusgil et al 2003). This Master thesis report studies the underlying processes and practices within an organization that aims at supporting innovation capability and creating innovations. Therefore, a broad definition needs to be adopted. The OECD (2005) defines innovation as:

“An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.” (OECD 2005, p. 46)

This description moves the definition of innovation away from being a discrete event to being a process, which takes place both within organizations and through interaction with the external world. This view is shared by others, such as Baregeh et al (2009) who defines innovation in a similar manner:

“Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.” (Baregeh et al 2009, p. 1334)

The definitions made by OECD (2005) and Baregeh (2009) both capture innovation in a wide perspective, well in line with the perspective used when conducting this study.

2.2 Innovation Capability

Innovation capability is not an isolated and easily identifiable concept; rather it is composed of a number of different elements consisting of the firm’s practices, processes and resources (Lawson & Samson, 2001). Fuchs et al (2000) defines innovation capability as a higher-order integration capability, consisting of multiple capabilities which when combined gives the organization innovation capability.

Lawson & Samson (2001) choses to divide innovation capability into seven major elements; Vision and strategy, Harnessing the competence base, Organizational intelligence, Creativity and idea management, Structures and systems, Culture and climate, Management of technology. All these elements in turn incorporate a large number of variables affecting innovation capability. Several more or less similar constructs of the components of innovation capability exist, but the one provided by Lawson & Samson (2001) will here be used to describe these components. This will also be supplemented with remarks and complementary descriptions made by others. The purpose is not to thoroughly assess all aspects of innovation capability; rather the main aim is to simplify and thereby explain the concept of innovation capability.

Vision and strategy

The vision and strategy of a firm plays the role of directing the firm’s attention to certain targets
and visions about the future, which if achieved will provide a competitive advantage. Having a clearly defined vision and strategy requires the firm to decide on which businesses and markets to focus on, as well as how to create value within these (Lawson & Samson 2001). Thus it can be seen as the firm’s way of deploying its capabilities and resources over time in a targeted way to meet current and future demands within the firm’s marketplace (Adams et al 2006), although Ben & Lawson (2001) makes a distinction between the firm strategy and the actual utilization of the firm’s resources and capabilities. Strategy and vision is needed at all levels of an organization, thus both overall firm strategies (Vanhaverbeke & Peeters 2005) and more specific strategies and visions at team-level are needed to promote innovation (Lynn et al 1999).

Harnessing the competence base

The utilization of the firm’s resources is by Lawson & Samson (2001) denoted as ‘Harnessing the competence base’. This includes the ability to successfully deploy and coordinate the resources and capabilities of the firm to achieve the innovation objectives. Human resources, funding channels and innovation champions are considered to be important variables within this element of innovation capability. Time and money are examples of resources considered to be important, as it has been shown that innovation projects are more likely to succeed if time and economic resources are dedicated specifically to innovation activities (Bharadwaj & Menon 2000; Norell Bergendahl 2008) and more time than usual are put into the project (Cooper & Kleinschmidt 1988).

Organizational intelligence

Having the capability to understand and learn from both competitors and markets will allow an organization to capitalize on the information provided in a value adding way (Lawson & Samson 2001; Marsh & Stock 2003). This is achieved through utilizing this information to identify opportunities and threats, and proactively adapting the organization to the conditions of its environment (Lawson & Samson 2001).

Creativity and idea management

Creativity serves as input to the innovation process by providing the organization with new ideas, and therefore organizations need to encourage creativity (Lawson & Samson 2001). Although creativity can be seen as the basis of innovation, an organization must also be able to efficiently collect, evaluate, and further develop the right ideas (Flynn et al 2003).

Structures and systems

This element includes variables such as bureaucracy, organizational structure and reward systems. Bureaucracy generally increases over time in organizations, and innovative organizations must find ways to break down the barriers that separate different functions, product groups or business areas, allowing these to cross-fertilize. Systems for rewarding and recognizing achievements made by groups or individuals also has an impact on the firm’s innovation capability, although these must be carefully designed in order to serve its purposes (Lawson & Samson 2001). Manso (2011) & Tidd et al (2001) describes innovation as the result of learning through exploration of untested approaches. Manso (2011) concludes his study of incentive and reward programs by stating:

“Tolerance (or even reward) for early failure, reward for long-term success, excessive continuation, commitment to a long-term incentive plan, and timely feedback on performance are all important ingredients to motivate exploration.” (Manso 2011, p. 40)

Culture and climate

According to Deal and Kennedy (1982 cited in Jackson & Parry, 2012, p.72) organizational culture can be simplified to “the way we do things around here”. The culture and climate within an organization also has an influence on its innovation capability. Lawson & Samson (2001) incorporates tolerance of ambiguity, empowered employees, creative time, and communication in their construct. Ekvall (1996) who studied organizational climate thoroughly also includes these aspects, although dividing them into a larger number of sub-themes. The themes used by
Ekvall (1996) to describe a creative climate are Challenge, Freedom, Idea Support, Trust/openness, Dynamism/liveliness, Playfullness/humor, Debates, Conflicts, Risk-taking and Idea time. All of these, except conflicts, are considered to have a positive impact on the creative climate. Ekvall's studies show that when these aspects are in place, the innovation performance of the firm will be positively affected.

National culture also influences an organization. According to (Newman and Nollen, 1996; Yukl 2013) national culture is rather hard to change as the values, beliefs and assumptions are acquired at an early age. For employees to understand and approach their work tasks, their national culture is a central part (Newman & Nollen, 1996; Yukl, 2013). If management practices in a very different way compared to the national culture of the employees, they might perform poorly (Newman and Nollen, 1996). As firms are becoming more and more globalized and the employees have different national backgrounds, it is important to not forget the aspect of national culture in the organization (Jackson & Parry 2012).

Management of technology
The ability to assess and fully exploit the technological competence within the firm, and linking this to the innovation and business strategies is a major determinant of R&D performance (Lawson & Samson 2001). This is also supported by Centindamar et al (2009), although they stress the fact that the importance of management of technology is largely dependent on which type of innovation that is referred to.

2.3 Innovation Management
Innovation capability is composed of multiple capabilities and resources, and innovation management is about managing these capabilities in a coordinated way to stimulate innovation (Goffin & Mitchell 2010; Lawson & Samson 2001). Furthermore Goffin & Mitchell (2010) argues that innovation management as a research subject has not yet reach maturity, by that meaning that there are no methodology available which incorporates all relevant aspects. They claim that instead practitioners of innovation management are left to select and combine methods and models from different areas of thinking.

Yet innovation management can be described as taking a strategic approach to innovation and thereby refining, adapting and deploying the firms resources and capabilities in a coordinated way, with the aim to create and sustain innovation capability (Tidd et al 2001; Goffin & Mitchell 2010). Thus it can be seen as a way of integrating changes in technology, markets and within the organization (Tidd et al 2001).

Some studies show that organizational learning is an antecedent of innovation. The underlying assumption is that organizational learning plays a key role in achieving speed and flexibility in the innovation process, which increases firm performance (Jiménez-Jiménez & Sanz-Valle 2011; Calantone et al.). A learning perspective on innovation management is also expressed by those who provide prescriptive models of how to manage innovation, for example Goffin & Mitchell (2010). In short, their model consist of three steps, where performance improvements are achieved by assessing current innovation performance, identifying areas of improvement and then implementing changes to create organizational learning and boost innovation performance. To create organizational learning, the organization must consider both the organizational and the individual level (Crossan & Apaydin 2010). The majority of research on innovation management focuses on the organizational level, although Crossan & Apaydin (2010) argues that more emphasis should be put on the individual actors within the organization. This is motivated by the fact that it is at this micro-level of the organization that the managerial practices takes place every day, thus implicating that the individual and group level is as important as the organizational level of innovation management (Crossan & Apaydin 2010).
2.4 Leaders, Teams and Change Work

Teams have a great importance in today’s organizations. A team can be defined as a group of individuals working together to solve a set of tasks. Forming teams is a way of organizing individuals within the organization, which can be used at all levels of an organization (Alvesson & Sveningsson 2007). There are several reasons for using teams. One main argument for using teams is that power and responsibilities can be partly transferred to the teams themselves. The purpose of empowering the teams is to achieve greater flexibility (Alvesson & Sveningsson 2007), by increasing the teams’ ability to take their own decisions and adapt their way of working according to their own conditions (McDonough 2000). Although teams are often seen as a way of granting a more free and autonomous working environment, critics argue that it is yet another “iron cage”. As power is transferred to the teams, it is also accompanied by increased responsibilities and demands. Furthermore teams are most commonly only given a small degree of autonomy, meaning that teams have only limited opportunities to influence their way of working (Alvesson & Sveningsson 2007). Nonetheless, studies have shown that empowerment of teams increases commitment and job satisfaction (McDonough 2000; Muthusamy et al 2005). As team members feel more influential, a performance enhancing and innovative climate is created, where team members feel more loyalty and responsibility to both their team and organization (Frischer 1993). The degree of freedom and responsibility given to the team members is also related to the speed of product development. A higher degree of autonomy accelerates the product development process, through faster decision-making and increased cooperation within the team (McDonough 2000; Muthusamy et al 2005).

Many have studied the critical success factors for implementing organizational changes. When making changes in an organization, the implementation of these are facilitated by letting those affected by them be part of the decision-making process, as this will reduce resistance to change (Kotter 1995; Bessant & Caffyn 1997). Another important aspect, especially when performing change work at team level is a shared understanding for the need of changes as well as a shared vision about what to achieve (Klimoski & Mohammed 1994). When seeking to perform change work aimed at increasing the innovation capability of a team, innovation measurement systems can be used to drive change, although these need to be carefully adopted to the context of the team as well as focusing on learning rather than evaluating the team (Ritzén & Nilsson 2011). The vision of what to achieve by the changes being made should include both short-term and long-term objectives, as these can be used to highlight short-term and long-term progress respectively, which is needed to encourage the implementation process (Kotter 1995). Other important factors for successful change work include senior management support and commitment, focusing on concrete problems, assigning responsibilities and empowering those committed to the changes (Stelzer & Mellis 1999).

There are several definitions of leadership, however one of the more well cited comes from Yukl (2006, p 23) and states that “the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives”. Management is similar to leadership but in many ways also different. There are some extreme distinction that claims that the same person cannot be both a manager and a leader. However, research has been performed that do not support this view (Yukl 2013). Bennis and Nanus (1985, p. 21) clarify the difference between managers and leaders in the following quote “Managers are people who do things right and leaders are people who do the right thing”. Their definition is similar to Kotter’s (1995) suggestion that managing is about order and generating predictability, whereas leading is more about producing change in organizations. However, in an organization both managing and leading is necessary to create balance (Yukl 2013).

Depending on the type of team and situation, different performance determinants has relative importance to the overall team performance. The team leaders can influence the determinants of
team performance by different leadership behavior. Task commitment and collective efficacy within a team facilitates cooperation and innovation and can be influenced by a leader who is visioning, expressing confidence and celebrating progress. Adaption to change can be influenced by leadership behavior that facilitates collective learning by the team. (Yukl 2013)

Effective leadership within change is a meta-category\(^1\) called “change-oriented behavior”. This behavior has not been given a lot of attention in research until the 1990s (Yukl 2013). Change-oriented leadership is focused on encouraging and making it easier for change to occur. The Figure 2 below exemplifies some of the typical change-oriented behaviors.

<table>
<thead>
<tr>
<th>Change-oriented Behaviors</th>
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<tr>
<td>Monitor the external environment to detect threats and opportunities</td>
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<tr>
<td>Interpret events to need for change</td>
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<tr>
<td>Study competitors and outsiders to get ideas for improvements</td>
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<tr>
<td>Envision exciting new possibilities for the opportunities for the organization</td>
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<tr>
<td>Encourage people to view problems or opportunities in a different way</td>
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<tr>
<td>Develop innovative new strategies linked to core competencies</td>
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<tr>
<td>Encourage and facilitate innovation and entrepreneurship in the organization</td>
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<tr>
<td>Encourage and facilitate collective learning in the team or organization</td>
</tr>
<tr>
<td>Experiment with new approaches for achieving objectives</td>
</tr>
<tr>
<td>Make symbolic change that are consistent with a new vision or strategy</td>
</tr>
<tr>
<td>Encourage and facilitate efforts to implement major changes</td>
</tr>
<tr>
<td>Announce and celebrate progress in implementing change.</td>
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Figure 2. Change-oriented Behaviors. Source: Yukl 2013\(^2\).

A change-oriented behavior also tends to encourage innovative thinking (Yukl 2013).

Trying to change an organization to adapt to the external environment is not uncommon. However, not all of the firms that try to perform change work succeed (Kotter, 1995). One of the more usual mistakes is that a great enough sense of urgency is not established. According to Kotter (1995) it is when 75% of the management team at the firm is really convinced that something needs to be done that the urgency rate is high enough. The more successful change efforts usually starts when individuals or groups of people at the firm starts focusing on the current market situation, trends etc. and realizes that something needs to be done (Kotter 1995). The second error made is not creating a powerful enough guiding coalition. If it is only a few people and not a team with mandate that are trying to start a change within a firm there is a risk that those who oppose of the change mobilizes and succeeds in stopping the attempts of transformation. The third step is to create a vision and develop strategies that can concretize the possibilities of achieving the vision. It is also crucial that the vision of change is communicated within the company. The next step is to empower others to action in the vision and encourage employees to take risks. Afterwards comes planning for short-term wins as well as creating them. This is to reward and show of those who created fast changes. The second last step is to consolidate improvements but at the same time produce more change. During this step it is important to recruit, promote and train those who are capable of implementing the vision. The last step is to institutionalize new approaches to make sure that the organization does not go back to the old way of doing things. In Figure 3 an overview of the different steps of transformation is presented.

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\(^1\) Theories on effective leadership that includes one or two general defined behaviors. (Yukl 2013)

\(^2\) Change-oriented Behaviours from Yukl, 2013, p.66.
2.5 Mental Models

The term ‘mental model’ refers to the individuals’ representation of a system and its expected behavior (Holyoak 1984). It is a deeply held image of how a system works, and it has a major influence on how the individual interpret and interact with its surroundings (Kim 1993). Furthermore, a shared mental model refers to a situation where there is overlap between the mental models of the individuals within a team, which leads to a shared approach to the tasks and processes of the team (Druskat & Pescosolido 2002). A number of similar constructs explaining the process by which individuals make sense of their surroundings exist in different fields of science, including transactive memory, cognitive consensus, team mental model and collective learning. The reason of the wide range of existing constructs is that different notions are used to describe different aspects of the same phenomenon, and different fields of science have established different terms (Mohammed & Dumville 2001).

Cannon-Bowers & Salas (2001) distinguish the different constructs into four broad categories, based on their main focus - task-specific knowledge, task-related knowledge, knowledge of teammates, attitudes/beliefs. Task-specific knowledge refers to having shared knowledge of actions, sequences and procedures that are needed to perform the team’s tasks. Task-related knowledge is closely related to task-specific knowledge, although it is not task-specific, rather it refers to knowledge on a more general level regarding teamwork issues and how the team is supposed to cooperate to perform its different tasks. By knowledge of teammates they refer to an understanding of the different team members preferences, strengths and weaknesses, which is needed for the team to perform well. Lastly, by attitudes/beliefs they refer to a situation where the members have similar attitudes and beliefs about their environment, but at a more overall level compared to task-specific or task-related knowledge. Sharing the same attitudes/beliefs causes team members to be more compatible in the sense that they interpret their environment in a similar way. This is argued to enable more effective decision-making and increase the consensus and motivation within the group (Cannon-Bowers & Salas 2001).

3 The different steps to transform an organization, Kotter, 1995, p.61.
As explained, a number of similar constructs exist which elaborates on how team members make sense of their environment and builds a mental image of how their team is functioning (Klimoski & Mohammed 1994; Mohammed & Dumville 2001). In this Master thesis report the term mental model is used as a collective term. By doing so, referring to a mental image that potentially can hold all types of knowledge about the team: task-specific knowledge, task-related knowledge, knowledge of teammates and attitudes/beliefs. Furthermore, term shared mental model is also used. Druskat & Pescosolido (2002) describes a shared mental model as a situation where the mental models of the individual team members are similar, which leads to a shared approach to the tasks and processes of the team.

A question at issue regarding shared mental models is what is meant by shared. According to Mohammed et al (2000) it is not just a question of having or not having a shared mental model, rather there are several different degrees of sharing. Cannon-Bowers & Salas (2001) proposes four different categories to the describe what shared means. The first one, shared or overlapping, describes a situation where team members might be specialized in different areas, but need to have a shared base knowledge to cooperate properly. The second category, similar or identical, refers to situations where the team members need to have identical or very similar knowledge. They emphasize the importance of this category regarding attitudes/beliefs, as successful team development depends on a mutual will to address certain issues. Their third category, compatible or complementary, refers to situations where team members not necessarily are having similar or shared knowledge, but their respective expertise are still complementary in the sense that it leads to similar expectations on the behavior of the team. The last category, distributed, refers to situations where teams are having highly complex tasks making it impossible for team members to share the same knowledge. Instead knowledge is distributed among members in a way that still enables them to coordinate their actions in an effective way.

As presented above, there are many possible settings for shared mental models when looking at both what type of information they hold and to what extent they are shared among the team members. Depending on the characteristics of a team’s field of work, different levels and types of shared knowledge is needed. The optimal level of sharing is largely dependent upon the tasks of the team, as well as the team member’s mutual dependency and the team’s maturity. To make a simplifying example, in teams where team members have distinct roles based on their expertise, task-specific knowledge should primarily be distributed, as each member is specialized in their respective field. Task-related knowledge should be overlapping, so that the different team members can cooperate properly in the overall work process. Attitudes/beliefs should be balanced between consensus and diversity (Mohammed & Dumville 2001). The balance between consensus and diversity is motivated by the fact that some degree of diversity is needed in teams to ensure that different perspectives are considered within the team, although too much diversity might increase the level of negative conflicts (Pelled et al 1999).

In the context of a team-based organization, having shared mental models is fundamental to team learning. This as the foundation of collaboration is to build a mutual conception of the tasks that the team is to fulfill (Van den Bossche et al 2011). Having a shared mental model within a team is thought to improve decision-making performance and increase the team’s ability to adapt to change by collectively foreseeing emerging needs of the team (Klimoski & Mohammed 1994). Further it improves trust, morale and satisfaction within the team (Cannon-Bowers & Salas 2001). In turn, all of these factors have a positive influence on team performance and effectiveness (Klimoski & Mohammed 1994; Cannon-Bowers & Salas 2001).

A question at issue is also how to develop a shared mental model in a team. A shared mental model is continuously developed over time, by interplay between team members, from the forming of a team throughout its lifecycle (He et al 2007). Consequently, the shared mental model become more accurate over time (Levesque et al 2001). Hsu et al (2011) found that involving all team members in the decision-making facilitates forming a shared mental model. He et al (2007), who studied how mental models evolve in newly formed software development...
teams, found that all forms of verbal communication were more contributing to the development of a shared mental model than other types of communication.

2.6 Team assessment

There are many ways of assessing and defining team attributes. (Gibson et al 2000; Joyce & Slocum 1984). Kirkman et al (2001) argues that there are four requirements for such constructs. These are that the construct must reflect the team as whole, there must be agreement among team members with regard to the construct, the construct must discriminate among teams and the origin of the construct must reflect the processes of interaction that occur within the team.

The method used in this study is based on individuals’ assessments of their respective team, which are then aggregated in order to assess the teams as wholes. Such a method does fulfill the requirement of reflecting the group as a whole, but does not necessarily fulfill the other requirements. The other requirements are largely dependent of what is being measured and what variables that are used. Kirkman et al (2001) argues that using aggregated scores fulfill all requirements except the last, reflecting the process of interaction within the team. The fulfillment of the last requirement is hindered by the fact that team members make their assessment without interaction with the rest of the group. One main area of criticism regarding this kind of method is that the individual assessments might be more focused on individual perceptions than the team’s abilities as a whole (Gibson et al 2000). Another area of importance is the risk of causing a bias, when team members are to rate their own or their teams performance, making results seem more positive than in reality (Joyce & Slocum 1984). Kirkman et al (2001) argues that this problem is solved in part by using survey items that does not capture any individual attributes, but instead only incorporates attributes of the team as a whole. Despite the possible downsides of using aggregated individual scores to provide a description of a team, it has been successfully used in other NPD research (Nerkar et al 1996; Kirkman et al 2001). Kirkman et al (2001) further argues for the validity of aggregation methods, although recommending to combine it with other measurement techniques.
To make it easier for the reader to understand the environment in which the study has been made, this chapter will briefly describe the firm where the empirical part of the study was performed.

### 3.1 The firm

The firm where the empirical study was performed is an international corporation within ICT. They are present in over 100 countries and have over 100 000 employees. The firm is working with B2B. Figure 4 below shows a simplified outline of the firm’s organization.

The survey and interview was performed in 13 teams in two different product units. One of the product units is working with current technology and the other unit with new technology. They are both working with software development.

### 3.2 Innovation Action Workshop

The firm is constantly aiming towards becoming more innovative and has created a set of tools, which can be used by teams that seek to improve their innovation capability. Teams are not forced into using the tools, instead the aim is to create an awareness of them so that teams can use them whenever they feel a need for it and feel that they want to use them.

One of the tools consist of a workshop called “Innovation Action Workshop” where the firm has identified and described 24 innovation challenges (IC) that they consider do be crucial for a team’s innovation capability. The 24 innovation challenges are categorized in three groups, which are “Culture”, “Process” and “Action”. The innovation challenges in the culture category...
are challenges that the firm believes affects the culture of the team such as diversity and openness. An innovation challenge in the process category is for example flexibility, suggesting that having flexibility in the processes and structures can help to drive innovation more effectively. In the action category the innovation challenges that have been identified are for example time and funds. Meaning that they are important when driving innovation in the team. Figure 5 below present some of the innovation challenges. Due to confidentiality issues only some of the innovation challenges, that are crucial for the understanding of the later in presented findings, will be fully described in this Master thesis.

The innovation challenges can be seen as the firm’s view of which factors that contribute to the innovation capability of teams. The methodology can therefore be seen as a way of managing innovation at team level. A team that performs the workshop firstly jointly identifies three challenges out of the 24 predefined innovation challenges and then decides which actions that are needed to address the challenges. Based on the challenges and actions, the team set up targets. The targets are expressed by measurable indicators, which can be used for evaluation at a later stage. The purpose of this procedure is to create a bottom-up change that improves the company's innovation capability. The effects of this change are not immediately measurable at an organizational level, as time is needed for the innovations to be implemented or commercialized, and thereby measurable. On a team level the prerequisites for evaluation is better, as the teams using the method have measurable targets.

In this study the 24 predefined innovation challenges that the firm have identified and defined as important for teams’ innovation capability, was used in the survey. This is to use the same vocabulary and definitions that the firm already uses. The innovation challenges, that are fully described in this Master thesis report, are presented in Table 1.
Table 1. Elaborated descriptions of some of the innovation challenges taken from the firm’s workshop manual.

<table>
<thead>
<tr>
<th>Category</th>
<th>Innovation Challenge</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture</td>
<td>Diversity</td>
<td>We need to improve the diversity (e.g. age, gender, experience, knowledge, background, style) in our teams to promote creativity and out of the box thinking.</td>
</tr>
<tr>
<td>Culture</td>
<td>Openness</td>
<td>We need to be more open for new ideas, visionary thinking, debate etc. to promote innovation and avoid “not invented here” behavior.</td>
</tr>
<tr>
<td>Culture</td>
<td>Commitment</td>
<td>We need to make sure that people are motivated and committed to engage and contribute to our innovation efforts.</td>
</tr>
<tr>
<td>Process</td>
<td>Flexibility</td>
<td>We need to increase the flexibility in our processes and structures to drive innovation effectively.</td>
</tr>
<tr>
<td>Process</td>
<td>Insights</td>
<td>We need to strengthen our insights about markets, customers and users (e.g. systematic opportunity scanning, business intelligence, consumer research).</td>
</tr>
<tr>
<td>Action</td>
<td>Funds</td>
<td>We need to establish dedicated funds for innovation activities.</td>
</tr>
<tr>
<td>Action</td>
<td>Time</td>
<td>We need to ensure we can dedicate enough time to effectively perform our innovation activities.</td>
</tr>
</tbody>
</table>
This chapter presents the process of this Master thesis project. The chapter aims to explain the literature study, the survey and interview methods as well as criticism of the sources.

4.1 Literature Study

A thorough literature study was conducted to examine existing research within the fields of covered in this Master thesis report. This was done in order to be able to interpret and analyse the data that was later collected. Literature on research methodology and survey construction was also studied in order to facilitate the research design. The literature study was done in an iterative way, meaning that throughout the Master thesis the authors consistently went back to the literature in order to analyse the findings.

To find and download scientific publications from journals, Google Scholar, KTHB Primo and EBSCO Multiple Database Search was used. This was complemented by written sources, found in the collection of the KTH main library.

Keywords used: Innovation Management, Innovation Capability, Change Work, Mental Models, Self-assessment, Team Adaptability, Shared Cognition, Cognitive Consensus, Change Management, Innovation Performance

4.2 Mapping the Perception of the Innovation Challenges

The mapping of teams’ perception of the innovation challenges has been made in several steps. First a planning phase was conducted and then an initial literature study was performed before executing the survey and interviews. An additional literature study was carried out before, during and after the survey and interviews, this was made to more thoroughly understand the findings of the survey and increase the outcome of the interviews.

![Figure 6. The process of this Master thesis project.](image_url)

4.2.1 Planning

Several measures were taken to increase the likeliness of a successful study. A planning report was written, managers in the organisation were notified about the study and meeting with the supervisors were setup.
Planning report

In the beginning of the masters thesis project a planning report was written. The report consisted of a chosen process, which was to be used during the study, theoretical areas and a time plan.

Managers

To obtain support from employees in the studied firm, concerned managers were informed that the study was going to be performed and some managers were invited to have opinions regarding the survey questions.

Meetings with supervisors

During this Master thesis project, meetings with the supervisor from the university and the firm were held.

4.2.2 Survey Method

A large part of this Master thesis project have consisted of a survey study that including over 400 employees at the studied firm.

Survey Tool

The first version of the survey was created using the Internet based application SurveyMonkey. This application was chosen due to its usability. The only work required was to type in the questions, arrange their order and so forth. However, SurveyMonkey had several downsides. The primary concern regarding the use of SurveyMonkey was the few layout options available. This was shown by the great amount of information that was exposed to the user in the first draft of the survey. This was thought to cause both lowered response rate and less valid results, due to respondents getting overwhelmed by too much information. Figure X shows a screen shot of the initial survey.

![Figure X](image)

To tackle these problems a custom survey tool was designed. This was done using Active Server Pages (ASP). ASP is a server-side scripting environment, which can combine multiple programming languages, which are run at the host server when the user accesses them (Microsoft, 2012). ASP was used due to its ability to combine multiple programming languages. In this case a web-based interface, accessible to all major web browsers and platforms, was combined with scripts and database handling needed to collect, process and store the answers of the respondents.
The web-based interface was created using HTML⁴, while all other functions needed was created using JavaScript⁵, and VBScript⁶. The functions needed were primarily user input validation functions. These functions validated the information before proceeding to next page by checking if all fields had been filled in and in other cases if the right number of checkboxes had been checked. Thereafter, the user input was processed with VBScript, and thereby also stored until the user had answered all questions. Lastly, the answers were written into a MySQL⁷ database.

Survey structure

The basis of the survey was the 24 different innovation challenges described in the “Innovation Challenges Handbook”, which are part of the workshop described in chapter 3. These 24 innovation challenges are further divided into three categories; Culture, Process and Action, with 8 innovation challenges in each category. Even though these were formulated as challenges, they could also be seen as describing different aspects of innovation capability. As the purpose of the survey was to identify the innovation capability strengths and critical gaps, i.e aspects possible to improve, the innovation challenges served as question alternatives in the survey.

Several iterations where made in which the questions were altered in accordance with the guidelines of Statistiska Centralbyrån (1990). The primary concern was to ensure that all respondents would interpret the questions in the same way; otherwise the results would lack validity. The question alternatives on the other hand were left practically unchanged, the only change needed was to write the answer alternatives in past tense. This as the purpose of the survey was to examine the teams’ perception of their own innovation capability, expressed in terms of the firm’s predefined innovation challenges. The terms used in the actual survey differ from those used in this report. This as the terms was adapted to the vocabulary used within the firm. For example, in the survey teams are called sections and innovation challenges are called innovation capabilities.

The basic structure was a survey divided in three parts, consisting of in total 14 pages. Part one consisted of two pages. The first one served as front matter by displaying the name of the survey as well as the each teams unique ID.

![Figure 8. The starting page of the survey.](image)

The second page included questions regarding background variables, which were thought to have an influence on the respondent’s answers in the following parts. These were age, gender, time in current team and their position.

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⁴ HTML is the standard programming language for displaying web pages in web browsers  
⁵ JavaScript is a scripting language commonly used for adding functions to web pages  
⁶ VBScript is a scripting language used in ASP-based web pages to add functions  
⁷ MySQL is an open-source database management system widely used in web environments
Part two had the aim to clarify what the respondents perceived as their innovation capability strengths, and consisted of in total five pages. The first page, see Figure 10, gave the respondent clarifications of the terms used and what the purpose of the current part was. This served as an instrument to ensure that all respondents would interpret the subsequent questions in the same way. For example, the word innovation was concretized, as it is likely that different people put different meanings into the same word (Statistiska Centralbyrån 1990).
The following three pages listed the innovation challenges from one category on each page. In all these three pages the same question was asked on all pages;

“Select three of the following innovation capabilities, which you consider to be the strengths of your team.”

On the fourth page the previously nine chosen innovation challenges were listed, and the respondent were once again asked the same question as on the previous pages, meaning the respondents got to chose their top three innovation capability strengths. The reason for using this system was that the initial idea, which was to list all 24 challenges on the same page asking the same question, risked to overwhelm the respondent with too much reading and too complicated decision-making. The amount of information should not be greater than what a person can keep in mind. Thereby the recommendation is that the number of alternatives should not exceed seven (Statistiska Centralbyrån 1990; Miller 1956), which was nearly achieved with the chosen structure.

Part three was used to gather information on what the respondents perceived as their innovation capability’s critical gaps. The first four pages followed the exact same structure as part two, with the difference that the question asked was;

“Select three of the following innovation capabilities which you consider to be the most critical for your team to improve.”

Further, it was complemented with a sixth question. The sixth question was optional and could be skipped. It listed the final choices from the previous question, which was the innovation capabilities that the respondent wanted to improve, and provided a text field where a free text answer could be written. The question was;

“What specific actions would you prefer in order to address these critical gaps?”

Because this page listed the previous choices from the survey, the respondents did not actually answer the same question, as each respondent would have made different choices in the previous questions.

The following, and last, page informed the user that the survey was now complete and thanked them for their participation.
Sample

Determining an appropriate sample was an essential part of the survey design. By using proper sampling procedures the sample can provide accurate estimates of parameters of the whole population (Buckingham & Saunders 2004), while minimizing the effort needed to collect the data (Buckingham & Saunders 2004; Iarossi 2006). The population is the group of individuals that the survey aims to study (Bryman & Bell 2005). The purpose of this survey was to study a small part of the population in order to make generalizations regarding the attitudes and opinions within the whole population.

The ambition was to be able to make generalizations regarding each selected team, while also being able to make comparisons between different Product Units (PUs) and nations as well as differences in attitudes among managers and employees.

Several factors had to be taken into account before making the survey sample. From practical issues like time needed for analysing the data to theoretical issues concerning appropriate sample size in relation to population size. To get an understanding of the appropriate sample size, two different models were used for the sample size estimation. The first one, described by Lantz (2011), bases its approximations on acceptable margin of error and how large the proportion that is to be detected is estimated to be. The approximate sample required if the proportion of individuals in a population, which fits into a certain category is to be determined can be found in Table 2.

Table 2. Required sample size when estimating proportions at 5% significance lever (Lantz 2011).

<table>
<thead>
<tr>
<th>Estimated proportion (%)</th>
<th>95/5</th>
<th>90/10</th>
<th>85/15</th>
<th>80/20</th>
<th>75/25</th>
<th>70/30</th>
<th>65/35</th>
<th>60/40</th>
<th>55/45</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin of error 5%</td>
<td>73</td>
<td>139</td>
<td>196</td>
<td>246</td>
<td>289</td>
<td>323</td>
<td>350</td>
<td>369</td>
<td>381</td>
<td>385</td>
</tr>
<tr>
<td>Margin of error 10%</td>
<td>19</td>
<td>35</td>
<td>49</td>
<td>62</td>
<td>73</td>
<td>81</td>
<td>88</td>
<td>93</td>
<td>96</td>
<td>97</td>
</tr>
</tbody>
</table>

Secondly it was analysed how large sample that is needed when the correlation between two variables within a sample are to be studied. In this case, correlations above 0.39 are considered to be relevant, as Bryman & Bell (2005) considers anything under this value to be a weak correlation. The sample size needed to find correlations depends on the strength of the correlations. Finding weak correlations requires a larger sample, as these are harder to observe. The rule of thumb is that the required sample (n), for a one-sample case to estimate a correlation of size (p) within the sample is stated in equation (1) below (van Belle 2002).

\[ n = \frac{8}{\Delta^2}, \text{ where } \Delta = \frac{1}{2} \ln \left( \frac{1+p}{1-p} \right) \]  

(1)
The relationship between correlation and sample size, described by van Belle (2002) is displayed in Figure 12. Although this illustrates the requirements for finding correlations of different sizes within the population, it does not take the population size into account. Hence, the formula was applicable to the population as a whole, rather than the relatively small sub-populations represented by each individual team.

![Figure 12. The relationship between correlation strength and sample size.](image)

The models described by Lantz (2011), see Table 2, and van Belle (2002), see Figure 12, gave an initial understanding of how large sample that was needed. However, these models did not take the population size into account, as it was not fully known. A concern was the reliability of results within each specific team, as they consisted of a small number of individuals. These conditions causes a low response rate to potentially generate misleading results, as each respondent are likely to have a significant impact on the teams average result. To prevent such outcome it was decided to include all members of the studied teams in the sample, as well as conducting complementary interviews to confirm the survey results.

This procedure aimed to give the opportunity to make generalizations regarding specific teams, groups of teams (i.e all teams within a country or all teams within a PU), as well as the population as a whole.

Survey distribution

The survey was distributed through e-mail, where each team received a separate e-mail containing a web link, which was unique to their team. The e-mail also contained a short description of the survey and its purpose.

Two weeks later a reminder were sent to all participating teams as an attempt to increase the response rate. Additionally, a second reminder were sent a few weeks later to selected teams, based on their low response rate.

Data analysis

Before analyzing the survey data, some of the collected data was excluded. Teams that had a response rate lower than 50% were excluded, as the results of these teams were considered to be unreliable. Instead, the data from 13 teams, including 188 participants, was used. By doing so, the data analyzed were more likely to express the true opinion of the respective teams. This made the results more reliable, and it also simplified the follow-up interviews, as questions could be formulated with higher certainty of being relevant to the teams.

When analysing the results, only the background variables and the variables representing top strengths and critical gaps was included. This as an inclusion of all the choices (9 strengths and 9 critical gaps) would generate a response image without any significant patterns, as the responses would likely be almost evenly distributed between the variables. By using only the top three strengths and top gaps, this effect could be prevented.

The top strengths and top critical gaps (three each) were collected in 48 different variables, where 24 represented all possible choices for strengths, and 24 represented all possible choices...
for critical gaps. Each of these variables could assume two values. A ‘0’ indicated that the variable had not been chosen, and a ‘1’ indicated that the variable had been chosen.

The data collected from the survey was analysed using Microsoft Excel and SPSS. MS Excel was used to create response charts and tables, while SPSS was used to analyse the correlations between the variables. The correlations were investigated through SPSS’s bivariate analysis, which returns a Pearson correlation coefficient between all variables pairwise, compiled in a table.

4.2.3 Interview Method

To further explore the findings of the survey, interviews were held with members from selected teams. The interviews were semi-structured (Westlander 2000), meaning that the main themes were specified in advance but respondents were allowed to freely elaborate on the topics to share their personal reflections. To keep the interviews within the scope of this Master thesis report, an interview guide was used, according to the recommendations of Kvale (2007), who emphasizes the importance of bringing up practical examples within the studied themes. Accordingly, the questions were formulated with the ambition to encourage sharing of personal experiences and examples within the themes explored during the interviews. Another important purpose of the interview guide was to ensure that the same type of data was collected within all teams, as this would allow comparisons between the different teams included in the survey.

The individuals selected for interviews were members of the teams with the highest response rate. From each of these teams, one respondent was selected. Respondents were randomly selected from the survey participant’s list.

Interview analysis

The interview material was processed according to the recommendations of Bryman & Bell (2005). Firstly, the data was sorted in different categories describing the topics explored. The categories were created according to the theoretical themes of this Master thesis, as well as other categories that were created to label data that did not fit into the predefined theoretical themes. Secondly the categories used were analyzed with respect to their content and the possible relationships between the different categories. Lastly, the findings were analyzed in regards to the theoretical framework and questions at issue in this Master thesis report.

4.3 Criticism of the Sources

Mostly primary and secondary sources were used in this Master thesis. The primary sources include the conducted survey and interviews. The secondary sources consist of articles, literature and websites. All of the sources used have been assessed to be real, meaning that they are what they claim to be. The secondary sources have been evaluated based on a time criterion, to make sure the content is current. The primary sources have been judged after a tendency criterion, meaning that the source is not influenced by the author’s own interest. By doing so, the sources can be considered to be reliable (Nationalencyklopedin 2012).
This chapter presents the results of the survey study and the interviews. Differences and similarities among the teams and other groups as well as within the teams will be presented.

### 5.1 Survey Results

The survey results in this chapter are presented with the help of several tables and figures. The innovation challenges are in the same order as they were presented in chapter 3. Tables with more detailed information of the survey responses can be found in Appendix A. The response rates, as well as the number of reminders sent out, are summarized in Table 3.

<table>
<thead>
<tr>
<th>Team</th>
<th>Unit</th>
<th>Country</th>
<th>Number of people in team</th>
<th>Number of respondents</th>
<th>Percentage of total team</th>
<th>Reminders</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>Sweden</td>
<td>14</td>
<td>7</td>
<td>50%</td>
<td>1-2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>Sweden</td>
<td>18</td>
<td>11</td>
<td>61%</td>
<td>1-2</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Hungary</td>
<td>25</td>
<td>20</td>
<td>80%</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Hungary</td>
<td>19</td>
<td>10</td>
<td>53%</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>China</td>
<td>41</td>
<td>24</td>
<td>59%</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>China</td>
<td>16</td>
<td>10</td>
<td>63%</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Hungary</td>
<td>21</td>
<td>16</td>
<td>76%</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>Hungary</td>
<td>25</td>
<td>14</td>
<td>56%</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>China</td>
<td>21</td>
<td>18</td>
<td>86%</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>China</td>
<td>28</td>
<td>14</td>
<td>50%</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>Finland</td>
<td>17</td>
<td>12</td>
<td>71%</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>Germany</td>
<td>21</td>
<td>12</td>
<td>57%</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>Germany</td>
<td>22</td>
<td>11</td>
<td>50%</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3. The response rates of the units, countries and teams included in the survey.
5.1.1 Summary of all the answers - Strengths

Figure 13, shows the distribution of the innovation challenges that are considered to be the teams’ strengths among all the respondents.

Some of the innovation challenges were among the three most commonly chosen innovation challenges in all or several teams. Table 4 shows the number of teams where the four listed innovation challenges that were among the innovation challenges that received the top three highest percentages within the team. It also shows the number of teams where the listed innovation challenges that received a percentage of over 30%. For example, “Openness” was one of the top three innovation challenges in all but one team. However “Openness” only received over 30% of the picks in 11 teams, meaning that in one team an innovation challenge received under 30% but was still one of the three most commonly chosen innovation challenge.

Table 4. Number of times an innovation challenge was top three in a team and had a percentage of over 30%.

<table>
<thead>
<tr>
<th>Innovation Challenge - Strengths</th>
<th>Top three in teams</th>
<th>Over 30 % in team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Challenge 4 - Openness</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Innovation Challenge 11 - Flexibility</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Innovation Challenge 3 - Diversity</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Innovation Challenge 5 - Commitment</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>
5.1.2 Summary of all the answers – Critical Gaps

Figure 14, shows the distribution of the innovation challenges that are considered to be the teams’ critical gaps among all the respondents.

Some of the innovation challenges were among the three most commonly chosen innovation challenges in all or several team. In Table 6 it can be deduced the number of teams where the four listed innovation challenges were among the innovation challenges that received the three highest percentages within the team. It can also be deduced the number of teams where the listed innovation challenge received a percentage of over 30%. For example, “Time” was one of the top three innovation challenges in ten teams. However, “Time” only received over 30% of the picks in eight teams, meaning that in two teams an innovation challenge received under 30% but was still one of the three most commonly chosen innovation challenge.

Table 5. Number of times an innovation challenge was top three in a team and had a percentage over 30%

<table>
<thead>
<tr>
<th>Innovation Challenge – Critical Gaps</th>
<th>Number of teams</th>
<th>Over 30%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Challenge 22 - Time</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Innovation Challenge 14 - Insight</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Innovation Challenge 21 - Funds</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Innovation Challenge 8 – Risk-taking</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

5.1.3 Summary of all the answers – Strengths and Critical Gaps

In each of the studied teams, the respondents are more of the same opinion regarding their strengths than their critical gaps. By comparing Figure 13 & 14 it can be seen that Figure 13 has more distinct peaks around some of the innovation challenges than in Figure 14. Meaning that a larger percentage of the teams’ respondents perceive the same innovation challenges to be their
team’s strengths than their team’s critical gap. Thus they seem less consistent on their critical gaps.

When all of the answers from all teams are put together it can be deduced that the long tail of the graph of the strengths does not hold as large a part of the chosen innovation capability as the graph of the critical gaps, as seen in Figure 15 and Figure 16.

![Strengths](image)

*Figure 15. The spread of all the answers among the teams regarding their top three strengths.*

![Critical Gaps](image)

*Figure 16. The spread of all the answers among the teams regarding their top three critical gaps.*
5.1.4 Countries and Units perception of their strengths and critical gaps

Teams from two different PUs have been a part of the survey. Even though the two units work with different products, the responses from their respective teams do not differ very much from each other. They both present the same pattern, with just a few exceptions, as seen in Figure 17 and Figure 18. However, the differences are largely due to single teams having large influence on the PU mean value.

Figure 17. The perceived strengths among the two units.
There were some differences when comparing survey answers in different countries, as seen in Figure 19 and Figure 20. However, when one team from a country is compared with one team in another country, they do not necessarily differ more from each other than two teams, which are in the same unit and country. Therefore it can be stated that a team’s geographical location is not a key influence on a team’s perception of its strengths or critical gaps.
5.1.5 Difference between team members and team managers

There was a notable difference between the survey answers of the team managers and team leaders meaning that the innovation challenges that the team managers perceive to be the most critical to address differ from those which the team members perceive to be the most important for the team to address. This also concerns the perceived strengths, which can be seen in Figure 21. The ICs “Commitment” and “Systematic” are areas that managers perceive as critical gaps, while “Time” and “Risk-taking” are more in focus for the team members, which can be seen in Figure 22. Worth noting is that only 13 managers were included in the survey, which causes single deviations to have a large influence on the average result.

Figure 20. The perceived critical gaps among the included countries.
5.1.6 Differences between male and females

There is not a big difference between the male and female respondents, which can be seen in Figure 23. The two more distinguished differences is that mostly female respondent consider the IC “Idea”tion” be their team’s foremost strength and only men consider “Roles” to be their team’s foremost strength. Worth noting is that there are fewer female respondents in the survey, which causes single deviations to have a large influence on the average result.
Figure 23. The perceived strengths among males and females.

In Figure 24 the percentage of the chosen ICs can be deduced. There are some differences but no major deviations.

Figure 24. The perceived critical gaps among males and females.
5.1.7 Team’s perception of their strengths and critical gaps

In Figure 25, that shows the distribution of the innovation challenges that are considered to be the team’s strengths, a pattern can be deduced. Some of the innovation challenges have received a high percentage in several teams. For example, “Openness” has received over 30% in almost every team, whereas “Time” only has over 30% in one team. In seven of the teams 50% or more within the team, have perceived the same innovation challenge as one of their top three strengths.

![Strengths](image)

*Figure 25. The spread of answers among the teams regarding their top three strength.*

In Figure 26, that shows the distribution of the innovation challenges that are considered to be the team’s critical gaps, a clear pattern cannot be deduced. The chosen innovation challenges are spread amongst the 24 possible choices. For example, no innovation challenge received 30% or more in over 8 teams. In only three of the teams 50% or more within the team perceived the same innovation challenge as one of their top three critical gaps.

![Critical Gaps](image)
Figure 26. The spread of answers among the teams regarding their top three critical gaps.

Figure 27 and 28 display the survey results of one of the teams included in the study. This example shows that there is some agreement about the strengths of the team, although there is no clear consensus. When looking at the critical gaps in Figure 28, it is apparent that the team is largely inconsistent. This pattern can be seen in all other teams as well.

Figure 27. Perceived strengths of the example team.
5.1.8 Comments

There were only 18 respondents who wrote additional comments in the survey. However, the comments were in several cases quite elaborated.

Almost half of the written answers were in some way concerned by the amount of time that is given to innovation activities. Criticism was given to the fact that little or no time is given to innovation activities. Some respondents argued that as the team’s project time schedule is very tight it is hard for them to find extra time for innovation, thus management should allocate time for these activities. Also the issue with funding was brought up as an important factor for improving innovation capability of the team, both funding regarding the activities but also funding for rewards.

Some of the respondents argued that the teams should have more contact with the customer as well as more knowledge about the customer’s requirements.

Three respondents thought that it is important that ideas are not left hanging and instead implemented within the organization. This will show team members that their ideas actually can lead to change, which will make team members motivated to continue to come up with innovative ideas.

Two respondents wanted more brainstorming sessions, where everyone in the team is included and the team as a group together comes up with innovative solutions.

One respondent argued that within the company there are no common tools, methods or actions for the entire organization. The respondent argued that this can be solved by being more risk-taking and getting more time from management to work on own ideas.

One respondent put forth criticism towards the fact that “passion” was not included in the survey. The respondent argued that passion is the foremost important part of innovation, as the person with an idea really has to believe in it in order to be able to sell it.
5.1.9 Correlation
A total of 26 correlations statistically significant at the 1%-level were found. The strongest correlation was found between respondent age and the time spent in current team, which is a self-explaining relationship. Otherwise there was not any correlation higher than 0.33.

5.2 Interviews
Of the total of 13 teams that were included in the study, six of them had a response rate over 70%. Thus the interviewed team members were randomly selected within those teams. However, only five teams did participate in the interviews. The two units were represented and every country with the exception of Germany.

All six teams in the two studied units were represented by at least one respondent. A total of 7 people were interviewed. Some of them had been working at the firm for over 30 years and some had only been employees for a little over one year. The respondents had different nationalities and the interviews were held in English.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Country</th>
<th>Number of people in team</th>
<th>Interviewed team members</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sweden</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Hungary</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>China</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>China</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Finland</td>
<td>17</td>
<td>2</td>
</tr>
</tbody>
</table>
When the respondents were asked if they agreed with the innovation challenge that most team members in their respective team considers being a strength according to the survey, all of them agreed. However when it came to the critical gaps, the respondents did not agree to the same extent. The respondents also had fewer difficulties exemplifying why an innovation challenge was considered being a strength, than why another innovation challenge was a critical gap.

*Innovation capability strengths*

Openness was the innovation challenge that received the overall highest rating in the survey. Respondents in the teams that had this innovation challenge as one of their top strengths all confirmed the survey results. They consistently expressed that their teams are open to different opinions, ideas, approaches, and having an open and constructive debate. One of the respondents extended the scope of the results by expressing that there was also a good level of openness between different teams working on the same product. This was seen as facilitating the overall development process of the products. In the teams where openness received the highest ratings, the respondents did not think that they were better than other teams in this aspect, and they could not provide any information on specific practices used within the team to maintain openness.

In teams where flexibility was one of the top strengths, the respondents expressed it as a consequence of the team being very free to influence their way of working. In these teams, team members felt that they received management’s support for improving their processes in a way that would save time in the longer run, even though it was time-consuming in the short run. These respondents perceived that the changes made in the team’s processes had actually saved time for their teams. In one of the teams, the respondent thought that flexibility was seen as strength mainly because the need for flexibility in the team’s processes was very low, and the task interdependence was also low. Thus meaning that this respondents view was that the flexibility was high in regards to the individual’s workflow, and therefore was perceived as a strength by the team members.

Teams in which diversity was seen as a major strength, saw diversity from a knowledge perspective. Thus meaning that by diversity they referred to education, experience and cultural origin rather that age and gender, although the respondent in one team explicitly expressed the age diversity as an advantage. The perceived benefits of having a diverse team was that this provided the team with different approaches to the same issues. In one team, diversity was seen as a downside, as it made it harder to get to know each other. This view was expressed in a newly formed team, in which the team members were still in the phase of conforming and getting to know each other on private level and their professional skills, strengths and weaknesses.

Information on commitment was only gathered from one respondent. This respondent described a sense of solidarity within the team, where all team members cooperated in times of time pressure to jointly solve the problems at issue. This was thought to be an effect of having team goals instead of individual goals. Instead of holding specific individuals responsible for failure, the team as a whole was responsible for deliverables. This was perceived as the major factor that was influencing commitment in a positive way.

*Innovation capability gaps*

Time was the innovation challenge that was perceived as the top critical gap, looking at the overall result of the survey. The interviewed respondents also confirmed this. The respondents expressed a few different aspects of this gap. One respondent elaborated on the fact that the team earlier had more time to develop the ideas of the team members, which was done through regular workshops and dedicated time for such activities. As a consequence of lack of time and money, this was not done anymore. A similar view was expressed by another respondent, which argued that all time was put into the main activities of the team, leaving nothing for other innovation activities. A third respondent argued that time pressure on the team was too hard. This
respondent argued that the team often had to deliver a product of unsatisfying quality, instead of putting a little extra time into development and achieving higher quality. Further this respondent thought that decreasing the focus on deadlines would have a positive impact on the team’s products.

Respondents in teams that had rated insights as one of their top critical gaps expressed similar reasons for the need of improvement. There was an overall agreement on the fact that their knowledge on their customers and users were too low. One of the teams had already discussed this matter, but no actions had been taken to improve their insights on their customers. The respondent in another team argued that too much of the customer interaction was performed by other departments within the firm, which prevented them from gathering the desired information directly from the customers.

Shared image

When the respondents were asked if they thought that their team had a shared image of the foremost strengths and critical gaps of the team, most of them answered no, however they did not think of this as a problem for the change work as there will always be people who do not like to adjust to new ways of work.

Generally the respondents did not describe any formal procedures for evaluating their teams strengths and critical gaps. In most team, this topic was never discussed in the group as a whole. Furthermore, respondents argued that the team members had quite different tasks, meaning that it was hard to know what the overall strengths and weaknesses of the teams are, as team members were focused in different areas, thus having different needs. Consequently, the majority of respondents argued that the views of the different team members regarding the team’s strengths and critical gaps were probably not the same. One of the teams had earlier had a regular “improvement day” where areas of improvement were discussed. This was really appreciated by the respondent, but these were no longer held due to lack of time at the moment.

Respondents were also asked how they thought that the absence of a shared image of the strengths and critical gaps of their team influenced their capability to learn and improve. The majority of respondents argued that factors such as the diversity of their team and the great differences in tasks made it impossible to have a shared image of their strengths and critical gaps. By that meaning that they had an adequate level of understanding of the overall needs of the team to actually make appropriate improvements in their way of working. Nevertheless one respondent argued that differences in their perceptions were a critical gap in itself, thus meaning that it was an obstacle to their change work. One other respondent, who also expressed that the lack of a shared image was one of the factors that made decision-making harder within the team, supported this view.
In this chapter a discussion of the results and the conclusions that the authors have drawn during this Master thesis project are presented. This is done using the theoretical framework presented in Chapter 2.

6.1 Discussion of the results

The overall results indicate that all teams except one included in the survey perceive “openness” to be one of their top three innovation capability strengths. The term refers to having an open climate with a constructive debate regarding ideas and visionary thinking. This was also confirmed during the interviews. This is an important part of creating an innovative organization, as an open climate is needed to be able to discuss and further develop ideas (Ekvall 1996; Lawson & Samson 2001). Although having an open climate is an important factor to create an innovative organization, there are several other factors that are important. From the empirical data collected in this study, it is apparent that many of the cultural aspects seem to be in place. In addition to having an open climate, factors such as active participation in innovation activities, established channels for collaborating with internal and external partners and having diverse work teams are all perceived as being in place.

On the other hand, other factors that Ekvall (1996) include in his construct of creative climate, such as risk-taking and idea time are perceived to be less sufficient. Both of these factors were included among the survey variables, and results indicate that teams perceive the low level of risk-taking and not having enough time dedicated to innovation activities to be an obstacle to their innovation capability. The survey results also indicate that there is a will among the teams to have more funds specifically dedicated to innovation activities. Time was the top critical gap, looking at the overall results, meaning that respondents desire more time specifically dedicated to innovation activities. Both the time and funding aspects were also elaborated on during the interviews. During these, respondents argued that the main tasks of the teams tended to consume all time and resources available, leaving little or no resources left for innovation focused activities. Norell Bergendahl et al (2008) argues that even though time is usually a scarce resource, it is important to give employees time dedicated to creative activities, which are not focused on specific development task. Furthermore, some teams perceived that the time constraints forced them into delivering products of insufficient quality causing problems in the longer run that could be avoided by spending a little extra on the development. Cooper & Kleinschmidt (1988) argues that innovation projects in which over the average amount of time is spent are more likely to succeed.

The second most critical gap, looking at the overall results was related to customer insight. Also during the interviews, the respondents expressed that they perceived that there was a lack of customer insight. Others argued that the teams themselves had little or no direct contact with their customers at all, as those activities were carried out by the market department, which was an obstacle to understanding customer needs. This was also expressed in the free text question of the survey. As these teams perceive those obstacles, communication and cooperation between them and their customers should be enhanced, as that might increase chances of product success (Griffin & Hauser 1996).

The free text question of the survey revealed that some respondents perceived that too few ideas were implemented. They proposed that the organization should somehow highlight the ideas that were implemented, as this would encourage others to contribute with their ideas. As the creativity of the employees are an important source of input to the innovation process (Lawson & Samson 2001), the firm should take heed of this criticism by improving their ways of encouraging creativity.
Looking at the overall patterns in the survey results, it is also apparent that there are large differences in the perceptions of team members in the same team. This is supported by the fact that only in five teams one of the innovation capability top strengths was chosen by 50% or more. Looking at the top critical gaps, there was only one team were one of the innovation challenges was selected by more than 50% of the team. In other words members from the same team generally does not perceive the same strengths or critical gaps. From the perspective of shared mental models, this indicates that the level of task-related knowledge, attitudes/beliefs, and possibly also knowledge of teammates, are low. All these factors are important for developing a shared mental model within the respective teams (Cannon-Bowers & Salas 2001).

Although these factors were not explicitly measured in the survey, the great differences between members of the same teams indicate that the teams should improve their knowledge about the teams themselves. This as the low level of consensus might be an obstacle to the teams, as their ability to develop as a team depends on a mutual understanding for the nature of their improvement needs (Kotter 1995). The proposition that the team members in the respective teams does not have a sufficient level of sharing of their mental models was partly supported by the interviews as well, although only a fraction of the respondents perceived it as a problem. This might be an indication of that the current level of sharing is sufficient, but it might as well be an effect of the team members not being aware of the advantages that could be created by improving this factor. As earlier research on the subject points to advantages in several aspects, such as improved team adaptability (Klimoski & Mohammed 1994), performance and effectiveness (Klimoski & Mohammed 1994; Cannon-Bowers & Salas 2001), the teams should not ignore this finding. By increasing the level of communication and discussion on these issues, the teams could over time develop their level of sharing of the mental models and the accurateness of these (Levesque et al 2001; He et al 2007; Hsu et al 2011).

All correlations except one found between the survey variables were weak, when defining any correlations below 0.40 as weak (Bryman & Bell 2005). The only correlation that exceeded this value was the one between the respondents age and time spent in current team. This relationship is self-explanatory as a higher age naturally increases the likelihood of having been in a team for a longer period. Thus, the correlations found will not be further analyzed.

As the results shows there are some differences between countries. However, this does not necessarily mean that two teams in the same country are more similar than two teams from two different countries. In some cases two teams from two different countries and units have a more similar perception of their teams foremost strengths and critical gaps that two teams from the same country and unit. One finding was that the same innovation challenges occurred as the top three strengths and critical gaps, regardless of the team’s unit and national culture.

According to (Newman and Nollen, 1996) national culture is rather hard to change as the values, beliefs and assumptions are acquired at an early age. For employees to understand and approach their work tasks, their national culture is a central part. (Newman and Nollen, 1996). If management practices in a very different way compared to the national culture of the employees, they might perform poorly (Newman and Nollen, 1996). However, organizational culture also plays a part in team’s performance (Erkutlu, 2012). Organizational culture can be defined as "the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them with the norms for behavior in the organization"(Deshpande & Webster 1989, p. 4).

As the study has been performed in five different countries where there are differences in the national cultures, it can be argued that there should be obvious differences between teams perception in different countries. However, the results show another situation, which could for example incline that the company’s organizational culture is stronger that the national culture, that there are several nationalities within the teams or that the studied variables do not depend on national culture.
Another finding was difference between the perceptions of managers and members. The team managers and the team members both tough that “Openness” is a top strength. However, the two groups do not agree on what is the most critical for their team to address. Over 30% of the managers consider “Commitment” to be one of the top three critical gaps, but only 13% of the members have the same perception. According to Yukl (2013) the team leader can influence team’s task commitment by being visioning, expressing confidence and celebrating progress. This means that the managers at the firm can improve the team’s commitment by being visionary, confident and supportive leaders.

Over 30% of the team members considers “Time” to be the most critical to address, compared to the 15% of the managers that chose the same innovation challenge.

Time is not an infinitive resource and thus managers should work on their time management skills. Time management can be improved by starting to log how time is spent on different activities as well as identifying time waste. Then the time log should be analyzed to identify how time can be better used. (Yukl 2013) According to Yukl’s (2006) definition of leadership, the leaders should influence the team member to not only understand but also agree on what needs to be done.

The result showed that there were not drastic differences between the answers of the male and female respondents. There were some perceptions of the ICs that did differ. However, no conclusion that this is due to gender can be made.

The two PU’s that have been a part of this study does not display any major differences from one another when looking at the survey results. One possible explanation is that within each of the PU’s there are several other variables that makes PU differences hard to observe. As each of the PU’s consists of several teams from different countries where different types of innovation support are given to the teams, the average result of the PU is rather an average of all the countries included. Another possible explanation is that respondents have focused on team-specific issues when taking the survey, making variables that are PU-specific rather than team-specific less influential.
6.2 Discussion of the Methodology

The following paragraphs will discuss the methodology used during the study.

6.2.1 Research methodology

The question alternatives in the survey were in many cases ambiguous, in the sense that they included multiple keywords that expressed different things. For example, the innovation challenge called 'openness', which was used as a question alternative, included openness in regards to new ideas, visionary thinking and debate. Consequently, respondents were left to make their own evaluation of all these aspects at the same time, instead of evaluating them one at a time by answering questions targeting one specific aspect at a time. This also lead to problems regarding the interpretation of the survey results, as it was sometimes hard to distinguish exactly what terms in the question alternatives that the respondents was referring to when answering the questions. If a more deep understanding of the specific sub-themes within the question alternatives should be investigated, many of them would have to be divided into more specific questions. This was also considered during the research design, but as the purpose of the survey was to gain an overall image of the respondent’s perception of such a wide subject, it was decided to keep the question alternatives in their original form. This as more specific alternatives would generate a much larger number of alternatives, risking that the respondents would be overwhelmed by to many to alternatives to choose from.

The fact that the sample of the survey was not randomly selected might have generated a bias. Participating teams were selected based on their willingness and ability to participate. This might have made the sample consist of teams more interested in innovation issues than the average team at the firm. Although these aspects were considered during the research design, it had to be neglected. This as the execution of this study was heavily reliant on collecting a sufficient amount of data.

Data was collected concerning the respondents age, time in team and gender. However, these areas were not prioritized as more interesting findings were located among other areas of the collected data.

Much of the analysis in this study relies on the aggregated scores that are used to describe the survey results of different teams and groups. Although this has been helpful in summarizing and discussing the results, it is also a possible source of error. By mainly looking at the mean score of the groups studied, some deviations might have been overlooked, as these become less apparent when looking at average scores. It is also hard to judge to how far extent the aggregated scores actually reflect the situation in the respective teams and groups. In this aspect, the interviews played an important part. By discussing the aggregated scores from the survey with interview respondents from the teams, the scores could be partly confirmed.

Much emphasis is given to mental models in this report. A factor that might decrease the validity of this study is that mental models were not specifically measured through the survey that constitutes the foundation of the study. Thus no reliable measure of the mental models of the individuals and teams have been made, rather the phenomena have been indirectly measured through the original survey. Nevertheless, the great differences between the perceptions of individuals within the same team indicated that the level of sharing of the mental models were not sufficiently high. To increase the reliability of our results, a great part of the interviews focused on mental models, trying to gather more data on the subject. Although the interview results partly confirmed a low level of sharing of the mental models, these results should be followed up with a measurement specifically targeting mental models. Doing so would enable comparisons with earlier research on the subject, which could further explain the present situation within the teams.

6.2.2 Execution
Before the survey was sent out to the different teams at the firm several pilot studies were performed. Relevant people both inside and outside of the firm got to try the survey out and give input. This was worthwhile as the feedback received from the pilot studies did improve the final version on the survey.

To get an answering rate over 50% the studied teams got two or three reminders. However, as the submitted answers were anonymous it was not possible to only remind those who had not already answered. Thus respondents who had answered the survey were unnecessarily disrupted. A program that enables to send reminders only to those who have not already answered should be used. If it not possible to find a program that can do this, it should be stated in the reminding e-mails that those who already have answered should disregard from the reminder. This in order to make sure that no one answers more than one time.

The survey was only distributed in English, which infers that some respondents did not answer the survey in their mother tongue. This could mean that all or parts of the survey were lost in translation and the responses were incorrect due to misinterpretation. However, the internal language at the firm is English, thus the respondents should be able to understand the questions. The same discussion can be made concerning the interviews. There were some language difficulties during the interview as some of the respondents had difficulties with formulating an answer. This could have been avoided if an interpreter would have been present.

The original time plan that was created turned out to be far to optimistic. This due to not properly being able to estimate the time needed to get input from people regarding the survey as well as booking interviews. Apart from that the other activities during the Master thesis project were given an appropriate amount of time.

6.2.3 Survey results

Before conducting the survey and interviews, an assumption was that there would be differences in how teams in different PUs or countries perceived their innovation capability strengths and critical gaps. Despite this, the results showed only minor differences. The low level of differences between the PUs could be an effect of that they are composed of teams from different countries. As many decisions on innovation support are made at country-level and other variables such as culture might have a strong influence, the average of the PU thus becomes misleading. A likely explanation of the low level of differences between countries is that too few teams from each country were included to generate an accurate description of the innovation characteristics of teams in the respective countries. Another possible explanation, which could explain the low level of differences between both countries and PUs, is that the teams perceive factors that are highly team-specific to be most influential on their innovation capability. As seen in the example of countries and PUs, it is important to highlight that the groups compared in this study are composed of other groups as well, which might have had influence on the level of differences between the different groups.
6.3 Conclusions

- A large part of the studied teams consider themselves to be good at openness, participation and collaboration, diversity, which suggests that they have a creative climate.

- A large part of the teams consider it to be most critical to improve their level of risk-taking, as well as having time and funds specifically dedicated to innovation activities, if their innovation challenges were addressed it would improve the teams’ innovation capability.

- Within the teams people are not fully agreed on their strengths or critical gaps. In order to improve their innovation capability they need to discuss and decide what is most critical to improve and together work towards that goal.

- The difference between the perception of team managers and team members is noticeable when it comes to critical gaps. In order for the manager to manage the team he or she should mobilize the team towards agreeing on what critical gaps need to be addressed first.

- Teams in the same country do not necessarily have more similar answers than teams in two different countries, which inclines that the national culture does not influence teams' perception of their innovation capability.

- Teams in the same PU do not necessarily have more similar answers than teams in two different units, which inclines that the belonging to a certain unit does not influence teams' perception of their innovation capability.

- The actual situation in specific teams seems to have a bigger impact on which innovation challenges that the team perceive as their foremost strengths and critical gaps than the belonging to a certain unit or country.
7 RECOMMENDATIONS AND FUTURE WORK

In this chapter recommendation as well as suggestions for future work is presented.

7.1 Recommendations

For the studied firm, the results imply that the teams do not have a shared mental model and that they do not agree on which innovation challenges that are the most critical for their team to address. To improve the shared mental model within the teams and at the same time agree on the top three critical gaps, a recommendation would be to perform the “Innovation Action Workshop”. This workshop would compel the teams to discuss the individual perceptions of their team’s critical gaps and in the end reach a collective view on what their team should aim to improve. The workshop also includes setting up actions with measurable targets, which will mobilize the teams to strive towards improving the same innovation challenges.

The results also have implications for other organizations aiming towards improving the innovation capability of their teams. Teams within any organization could benefit from having a shared understanding of their tasks and processes. Thus organizations should provide support methods that make it easier for teams to develop a shared understanding of their context. By doing so the teams might more easily achieve their objectives and improve their innovation capability. The study also shows that there are large differences between teams within the same organization. This implicates that the support given to teams must be customized to fit the needs of each specific team.

7.2 Future work

It would be highly interesting to perform a similar study at another firm. By comparing the results of similar studies phenomenon that are general can be identified and used for improving firms’ innovation capability in general. At the same time firm specific patterns can be identified and further explored within the firm.

For the firm that has been a part of this study, another survey study should be performed when teams have performed the “Innovation Action workshop”. This is to be able to identify changes between teams that have performed the workshop and those who have not. The intention is that teams that have performed the workshop will be more agreed on their strengths and critical gaps and have an action plan regarding how to improve their critical gaps.

The “Innovation Action Workshop” does only aim at agreeing on the team’s top three critical gap. However, it might be interesting to also agree on foremost strengths in order to be able to use the strengths to improve the critical gaps. Also, teams that consider themselves to be good at one innovation challenge can assist other teams to be better at that same innovation challenge.

As this Master thesis report has focused on some of the collected data, additional studies focusing on other areas are welcomed.
8 REFERENCES


## APPENDIX A: TABLES

### Teams’ perception of their team’s strengths.

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Different categories’ perception of their team’s strengths.

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Different categories’ perception of their team’s critical gaps.

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