The Linkage between Learning Capabilities and Innovative Capacity
A Case Study

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The purpose of the study is to explore the link between an organisation's learning capabilities and its capability to deliver innovative projects aligned with market needs.
The research was conducted following a case study approach using several sources of evidence and resulted in expanded theoretical framework by identifying underlying factors constituting exploratory and exploitative learning capabilities. Furthermore, the study highlights that organizational culture has a significant impact on learning capabilities and an agile approach to performance management.
The results provide support to practitioners working with exploratory and exploitative learning in order to be innovative and adaptive to changing market conditions.

INTRODUCTION

A study from Cooper (2013) suggests that decision makers are becoming more risk averse. The study shows that under the last decade the amount of innovative projects in the portfolios have decreases by 43.7 % and the number of projects that are creations of new product lines by 30.1%. While the amount of projects that are additions to existing product lines have increases by 20.8 %. This indicates that decision makers feel less comfortable with engaging and understanding the uncertainties involved in projects with high uncertainties.

VINNOVA is an organization that works under the Swedish Ministry of Enterprise and Innovation with the assignment to promote sustainable growth by improving the conditions for innovation. VINNOVA has since 2003 conduct research and other activities in order to stimulate renewal and development of both the private and public sector in Sweden. In their report from 2011, VINNOVA emphasizes that many Swedish companies want to have better understanding and predictability about market trends and needs to be better to take decisions in their development processes. Furthermore, Swedish companies also need to integrate knowledge from customers and users to be able take the right decisions to be innovative and competitive. In addition, the report highlights that many companies are weak in competence development and employee-driven innovation (Bjurström, Borälv, Fineman, Martinsson & Sjöberg, 2011).

The result of the above studies call for a change because an organization's competitive advantage is based on its ability to facilitate innovation, and the primary resource for innovation are human resources (Cabello-Medina, López-Cabrales, & Valle-Cabrera, 2011).

Dynamic capabilities are described as the ability to find new ways of competitive advantage through adequate responsiveness and meeting market needs in terms of innovation combined with the capability to efficiently manage internal and external resources (Eisenhardt & Martin, 2000; Hubbard, Zubac & Johnson, 2008; Killen, Hunt & Kleinschmidt, 2008; Teece Pisano & Shuen, 1997). Medina and Medina (2015) further elaborated on this theme and highlighted innovative, absorptive and adaptive capabilities as three important dynamic capabilities to achieve competitive advantage. They also emphasized that learning capabilities have an impact on the three dynamic capabilities and that new competences are developed by working in development projects or other knowledge-creating activities.

In addition, there is a close connection between an organization's ability to use its knowledge, the organization's intellectual capital and the organizations ability to be innovative (Subramaniam & Youndt, 2005). In this context, the intellectual capital can be considered as the human capital in combined with social and organizational capital (Lengnick-Hall, Lengnick-Hall, Andrade, & Drake, 2009; Subramaniam & Youndt, 2005) where social capital is represented by individuals' ability to share and exchange knowledge insight and mental models (Cabello-Medina et al., 2011). They also argue that employees with highly valued knowledge and skills contribute to innovation, as they are more willing to experiment and apply new ways of working. The capacity to innovate could be considered as a learning process (Oltra & Vivas-López, 2013) in which the most relevant feature is the uniqueness of knowledge (Cabello-Medina et al., 2011).

This leads us to a situation where organizational leaders need to have accurate information to take decisions to start new innovative initiative but also that innovation is created from individuals' abilities to experiment and test new ways of working.

In their work with defining a framework for efficient competence management, Medina and Medina (2015) defined two learning strategies applicable for an organization. Exploratory learning strategy is when new competences are generated integrated in the organization's competence base by working in projects or other value creation activities. Exploratory learning strategy takes place in accumulation and assimilation of competence. Exploitative learning strategy, on the other hand, is when newly generated competence is combined with existing and utilized in new projects or other value creation activities. Furthermore, they argue the exploitative learning takes place in transformation and utilization of knowledge, and emphasize that the two learning strategies need to be balanced to achieve sustainable competitive advantage.

The aim of this paper is to explore the link between an organisation's learning capabilities and its capability to deliver innovative projects in line with market needs.

To fulfil the purpose of this study, the learning strategies from Medina and Medina (2015) presented above, will be used on a case study that will answer to the following research questions: (1) what are the factors that enables generation of new competence in an organisation (2) what are the factors that enables exploitation of competence leading to an organisation delivering innovative projects, and (3) how can an organisation quickly adapt to changing market conditions?

An explorative case study approach is used, drawing on rich, qualitative data from a Swedish fast-growing company within the technology industry. The company is high ranked in terms of being innovative in Sweden and the case study was conducted in the Research & Development (R&D) organization analysing five different departments as sub cases.

The paper is divided into four main sections. First, we describe the link between competitive advantage, dynamic capabilities, learning capabilities, and competence management based on a literature review. Second, we outline the research design and how the case study was conducted. Third, we present the findings and analysis. Finally, we discuss the findings in relation to the framework and relevant literature followed by the conclusions, and practical and theoretical implications.

THE LINK BETWEEN COMPETITIVE ADVANTAGE, DYNAMIC CAPABILITIES, LEARNING CAPABILITIES, AND COMPETENCE MANAGEMENT

Dynamic capabilities can be seen as processes that are used to restructure organizational resources in a way where organizational leaders have control and can foresee changed conditions which forms a basis for decisions (Cepeda & Vera, 2007). Through dynamic capabilities an organization can act with strategic flexibility and reallocate resources to new initiatives in response to the new market conditions (Tamayo-Torres, Ruiz-Moreno, & Verdú, 2010). Three main dynamic capabilities can be seen as the base for an organisation to compete in dynamic market conditions namely, adaptive, absorptive, and innovative capability (Biedenbach & Müller, 2012; Medina & Medina, 2015; Wang & Ahmed, 2007).

Adaptive capability can be seen as an organization's ability to adapt to fast changing market conditions by having strategic flexibility balancing exploration and exploitation strategies (Biedenbach & Müller, 2012; Wang & Ahmed, 2007). In general terms, March (1991, pp. 71) distinct between exploration and exploitation in the following way: "*Exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution."*

Absorptive capabilities are based on the organisation's ability to acquire knowledge and learn from external sources and integrate the new information and knowledge the organization's processes (Biedenbach & Müller, 2012; Jiménez-Barrionuevo, Jiménez-Barrionuevo, García-Morales, & Molina, 2011; Volberda, Foss, & Lyles, 2010; Wang & Ahmed, 2007).

Finally, innovative capabilities refers to different activities related to innovation processes that strengthen and support the generation of new knowledge that can transform ideas into new potential products, services or markets (Pattinson, Preece & Dawson, 2016) and innovative capabilities are supported by efficient utilization of organizational knowledge through the generation of new ideas and exploitation of existing human capital in organizations, and also an organization's ability to grow and progress in a changing environment based on the generation of new behaviours and ideas (Kocoglu, Imamoglu, Ince, & Keskin, 2012). Furthermore, the capacity to innovate could be considered as a learning process (Oltra & Vivas-López, 2013) in which the most relevant feature is the uniqueness of knowledge (Cabello-Medina et al., 2011). Innovative capabilities can be *exploitative*, reinforcement of exiting knowledge, or *explorative* meaning transformation of existing knowledge into radical innovations (Biedenbach & Müller, 2012; Subramaniam & Youndt, 2005; Tamayo-Torres et al., 2010).

In their study of innovative capabilities, Lisboaa, Skarmeasb and Lagesc (2011) showed that exploitative innovative capabilities have an impact on a firm's current performance and on its exploratory innovative capabilities while exploratory innovative capabilities have an impact on a firm's future performance. As exploratory and exploitative innovative capabilities have different time horizons, an organization needs to balance exploitative and explorative innovation in order to achieve sustainable competitive advantage (Lin, McDonough & Lin, 2013; March, 1991; Medina & Medina, 2015).

Moreover, absorptive, adaptive and innovative capabilities can be seen as first-order capabilities that directly impact on competitive advantage while learning capability is a second-order capability that impact other capabilities (Killen, Hunt & Kleinschmidt, 2008; Medina & Medina, 2015).

However, absorptive capacity also impact on learning capability though external knowledge is acquired from external sources and used for commercial purpose in the organization (Volberda et al., 2010), and is especially important in a project context (Popaitoon & Siengthai, 2014). Furthermore, Schneckenberg, Truong and Mazloomi (2015) emphasize that working efficient with knowledge sharing strengthen an organisation's absorptive capacity and has a positive impact on organizational learning processes which in turn allow the organisation to adapt to changing competitive environments.

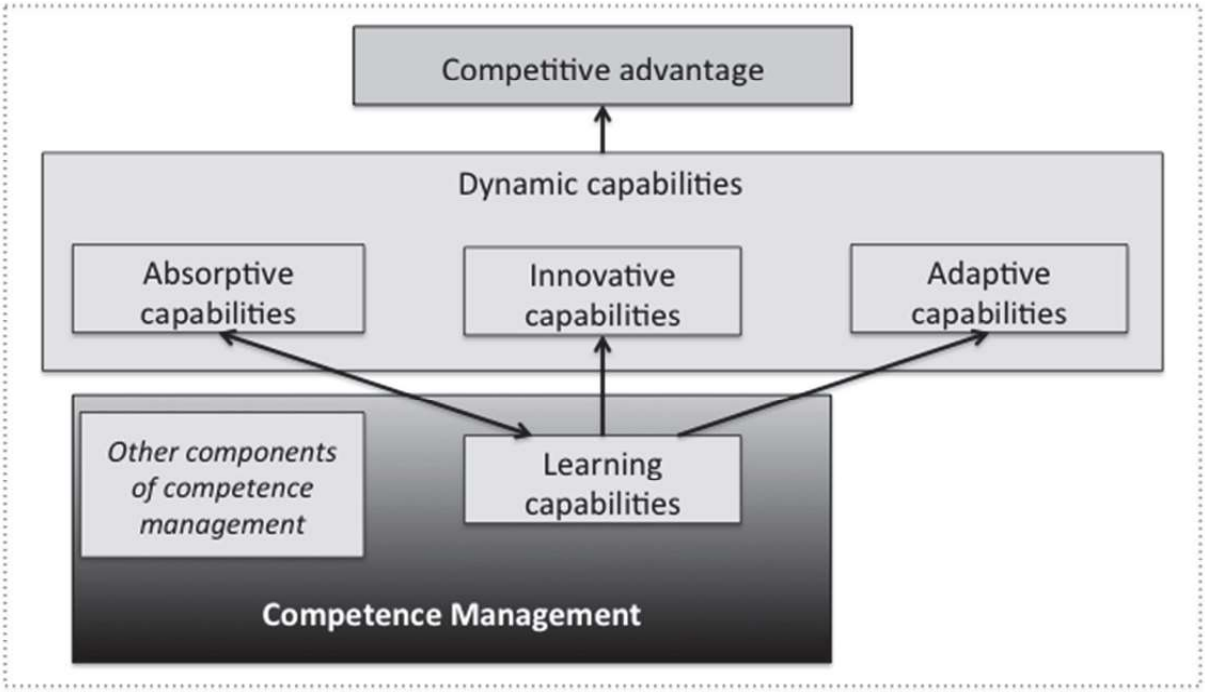
Learning as such can be seen from an individual perspective as well as from an organizational perspective. Learning from an individual perspective is a social process based on experimentation, use of knowledge in practical work, exceed boundaries by testing the technology etc. (Fenwick, 2008; Szulanski, 2000). Organizational learning on the other hand, can be carried out by both informal and formal processes where the informal processes are when people share knowledge in daily work and the formal

processes are the organizational ability to integrate knowledge from individual to group to organizational level and in this way either expand existing knowledge or create new knowledge (Lin et al., 2013).

In their work with defining a framework for efficient competence management, Medina and Medina (2015) defined two learning strategies applicable for an organization. Exploratory learning strategy is when new competences are generated integrated in the organization's competence base by working in projects or other value creation activities. Exploitative learning strategy, on the other hand, is when newly generated competence is combined with existing and utilized in new projects or other value creation activities. They also emphasize that the two learning strategies need to be balanced to achieve sustainable competitive advantage.

The link between competitive advantage, dynamic capabilities, learning capabilities, and competence management is summarized in Figure 1.

FIGURE 1
LINK BETWEEN COMPETITIVE ADVANTAGE, DYNAMIC CAPABILITIES, LEARNING CAPABILITIES, AND COMPETENCE MANAGEMENT



The arrows in Figure 1 show how different capabilities impact on each other.

RESEARCH DESIGN

This research was designed as an explorative case study with five embedded sub-cases on which we cooperated with fast-growing company in Sweden during the period January 2015 to August 2015. As the aim of the current study was to explore the link between an organisation's learning capabilities and its capability to deliver innovative projects in line with market needs, we decided to study the company's R&D organization.

The organization is a market leader within its segment and is driving the industry by continually launching innovative network products based on an open platform. They do not sell directly to customers; rather sales are carried out through a large and global partnership network. To meet market demand for new innovation, the company invests heavily in R&D and about 40-45% of the employees work within

R&D where main part is located to Sweden. As a knowledge-intensive organization, the main part of the activities is carried out in project as working form.

Following Eisenhardt (1989) and Yin (2014), we used multiple sources of evidence, namely documentation, archival records, interviews, physical artefacts, and observations.

The case study started with a review of different documents, such as project specifications, reports on lessons learned, HR procedures and processes, reports, process descriptions, and strategy documents, in total 124 documents. Access was provided to archival records, such as organizational charts, reports, and other documentation through the intranet. Then, an interview guide adapted to the different roles of the respondents was developed and tested with four respondents.

The interviews were undertaken in Swedish to ensure that there were no language barriers or misinterpretations. In all, 30 semi-structured interviews were conducted, lasting between 40 and 90 minutes. For each sub-department, three different roles (functional manager, project manager, and project team member) were selected to provide perspectives on the department. In addition, two product managers and two HR business partners were interviewed to gain an external view of the R&D department and to explore how R&D was connected to the product strategy process. Also, during the study period, we participated in different kinds of meetings as an observer, primarily different project meetings, such as sprint planning, retrospective planning, sprint demo, daily standup, etc., in total about 40 hours was spent on observations.

A case study protocol was created and maintained during the whole study using an analytic approach. Furthermore, a case study database was also developed to keep track of the results from the different sources of evidence.

The analysis was conducted after the data collection and the analytic strategy first followed Miles and Huberman (1994) by looking for patterns and concepts that were then categorized. Then, memos were created based on the field notes following Corbin and Strauss's (2008) recommendations. The memos were used to create concepts as a guideline for classification and abstraction.

We ensured construct validity, meaning objectivity and avoidance of bias, by using multiple sources of evidence and by establishing a chain of evidence as proposed by Yin (2014). External validity is about testing whether the findings are generalizable beyond the actual study. To meet this requirement, we used theory to validate the findings. To ensure the reliability of the study, we developed a case study protocol and a case study database.

THE CASE STUDY

In this section, we start by describing the context in which the fast-growing company operates. Afterwards, we provide an analysis of exploratory and exploitative learning capabilities.

Context

The company has grown fast in the last couple of years, in revenue, profits, and in the number of employees. Based on this organic growth, the company has worked hard on the recruitment and integration of new employees in the organization.

The organizational culture is considered strong; the company has invested time in communicating and reinforcing the culture, ensuring that people understand it clearly and behave in ways consistent with the culture, which is in line with what Flamholtz and Randle (2011) consider as a strong culture. The organizational culture can also be considered functional and positive which Flamholtz and Randle (2011) emphasize is an asset for the organization. As an HR business partner put it: "*The important values in the organization are passion, sharing, and responsibility.*" These three values were found in different shapes in the case study, as described in the analysis in the subsequent sections.

The company works with three core values (found in HR core values documentation and published on the intranet):

- *"Act as one", meaning that people should help each other, cooperate, show respect, commit to decisions, and have fun together.*

- *"Think big", meaning that people should adopt a holistic view, act today, be able to make decisions, challenge themselves, push boundaries, and achieve big changes step by step.*
- *"Always be open", meaning that people should be innovative, transparent, honest, available to customers, responsive, and always consider new ways of working.*

From the beginning, the founders focused intently on the culture and the importance of the core values. Today the core values are evident, especially "act as one," which encourages teamwork, cooperation between people, and people always to asking others if they have a question or a problem. In all discussions with people in the organization, including the external workforce, culture is mentioned as having a high impact on daily work.

The importance of the organizational culture can be seen for instance in recruitment. The recruitment process normally consists of two interviews for engineers and three for management positions, including project managers. The first interview is with the recruiting manager, some subject matter experts, and the applicant, focusing on technical skills and how the applicant might fit into the team. The second interview is with one R&D director from another part of the R&D organization, an HR business partner, and the applicant. The only focus in this interview is if the applicant has the right attitude to comply with the cultural values. Two important criteria according to an HR business partner are: "*Does the candidate have the right passion and does the candidate burn for the work?*"

For management positions, the same two steps are mandatory, and a third step is incorporated in which the applicant's leadership skills are tested by using an external recruitment agency specialized in testing leadership skills.

The different R&D departments have the freedom to choose project methodologies within certain frames. The company uses a tollgate model for decisions, but it is not always followed. One of the functional managers explained why they were not followed in the following way: "*Our department does not follow the tollgate model in a good way. The close relationship between the product managers, the project managers, and the functional managers results in that decisions are taken in an informal way. That is the reason why some of the tollgates not are important at our department."*

The department within R&D that develops products with hardware, electronics, and software tends to use more traditional project management methodologies that are due to the length of development of new hardware and electronic components, whereas departments developing software applications use agile project methodologies such as Scrum. Scrum is an agile framework based on a transparent development process in which self-organized teams break down the workload to pieces of iterations. The most common usage area is within software development (Saddington, 2012).

The freedom to choose a project methodology could be related to the organizational culture and the "always be open" value, encouraging people to think outside the box, be innovative, try different ways of doing things, and giving the responsibility to the team. This conclusion is supported by two of the functional managers where one of them claimed: "*We give a degree of responsibility to the individual and to the team, it is a part of the culture, always open*". The other functional manager expressed his view as: "*We give the team a high degree of freedom to organize themselves and to choose the way of working that is appropriate for them*".

Having described the context in which the company operates, we continue by considering which factors that constitute exploratory learning capabilities.

Exploratory Learning Capabilities

Exploratory learning strategy is when new competences are generated integrated in the organization's competence base by working in projects or other value creation activities (Medina & Medina, 2015).

The open culture improves knowledge sharing and learning in teams. The learning between teams is less visible in the organization, although people are encouraged to help each other and always respond to questions when there is an issue or problem to solve. A functional manager concisely expressed his view of the subject as: "*If you give them freedom, they will take on a higher degree of responsibility.*"

The culture also encourages time to learn and time to innovate. The different departments have different activities to support innovation; most of them allocate time for innovation days or similar activities. For example, one of the departments has one week twice a year time set aside in which the employees are able to work with new ideas, experiment, and test new product ideas. These kinds of activities encourage learning and the development of new competence. However, the importance of the different functional departments tends to result in the organization remaining in silos and makes cross-functional collaboration more difficult, or as a functional manager expressed it: "*We do not share enough, the functional structures and borders make it difficult. Your functional organization is important, and when someone want to move to another part of the organization or someone requests a resource, the first thought you have is that it might have an impact on your functional unit.*"

Breaking down exploratory learning, we obtain the areas described below.

The factor *Working with new and unknown areas* refers to how new competence are generated through experimentation, problem solving, and facing new challenges. The freedom to try out the new and unknown is strong; an employee has many opportunities to choose tools, experiment, and investigate new technology. People perceive that their engagement in projects in which they are working with new technology and on challenging tasks primarily develops their technological competence. One project team member put it as: "*I really like new development, to look forward to the next barrier, and toward new technology.*"

Also the ability to manage complexity and to learn improves when working on solving complex problems by linking different technologies in teams. This could be observed when watching younger engineers when they were forced to solve new problems, where they used their creativity and searched for new and different ways of solving problems.

Learning by working refers to how competence develops by applying knowledge and experience in real working tasks. Moreover, it is about seeking information and practicing what one knows in daily work. People describe learning by working in terms of being creative, learning from mistakes but also from successes, and having the opportunity to "*dig down into tasks to solve issues*", as described by a project team member. One young engineer described learning by working as follows:

> *…at university I learnt about object-oriented system development. But it was not until working here that I really learned how to use object-oriented system development. It is in real life you learn. The same thing with database design, it is not until you really work with it you learn how it works*.

The factor *Participation and sharing* refers to learning by people sharing information, with team members participating and sharing knowledge. The culture encourages sharing through its core value "act as one." This value is strong in the organization, and "doors are always open," meaning that it is always permissible to seek help when there is an issue or problem. There is also the time and space to hold enlightening talks or seminars in which people speak on an area that it is important. A project manager expressed how they shared information within his functional area in the following way: "*We encourage people to make tech talks, which are short talks about different kind of technologies.*"

Heterogeneous environment is described as an environment in which people with different competences work together towards the same goal. The analysis shows that there is a low degree of cross-functional collaboration and knowledge sharing. The focus lies in people's own areas and within the teams. One of the functional manager explained his view of the low degree of cross-functional collaboration as: "*The low degree of cross-functional collaboration and knowledge sharing is the effect and the disadvantage of that we are working in a functional matrix.*"

Next factor is *Group learning* which relates to people learning in groups through sharing, feedback, reflection, and discussion. There is a tendency to develop and maintain homogeneous and small teams. In this context, homogeneity means that the team has developed common ways of working and has established social norms. Such teams could be considered introverted, with strong team feelings. One project team member expressed his view of learning in group as: "*We are learning by sharing, we are helping and supporting each other, at least with those who work close to you.*"

Positive attitude refer to motivated and engaged people who are positive about working with problems and challenges and accordingly develop more competence. The analysis shows that being curious, having an interest in work, and being motivated increase the ability to learn and generate new competence. This area is a personal characteristic that facilitates the factors *trying the new and unknown* and *learning by working*. There is also a perception that a good attitude and strong motivation have a positive impact on quality. As one functional manager expressed it: "*We have not defined quality, but we normally deliver high quality products. If a person has responsibility for a task, he or she will deliver high quality*."

Competence development refers to formal competence development planning. The level of individual responsibility is high, which also has an impact on competence development. The employees have no formal competence development plans or any specific budget for competence development. Neither is formal training prioritized or linked to the business goals. However, if an employee wants to attend courses or various conferences to keep up to date with new technology, it is approved in most cases. A project team member explained it in the following way: "*We have possibilities for competence development, but you have to actively drive it yourself. The managers will not propose that you should attend to a course."*

The factor *Time and space* refers to the degree of freedom the employees have to share knowledge, test new ideas, or develop the best possible solution for a problem. The analysis shows that there is high degree of freedom for the employees to share knowledge and work with innovative ideas.

The factor *Learning from external sources* refers to how the organization can learn from external sources: its absorptive capacity. The focus in the organization is on developing the major parts of the products in house through internal competence and with little involvement from external parties. For parts of a product delivered from an external supplier, the knowledge tends to remain with the external party in most cases, meaning that absorptive capacity is low. A project manager put it as: "*In many cases the external expertise stays outside the company, and we have to engage the supplier again.*" During the observations, a degree of suspicion toward external suppliers could be perceived. Several employees expressed that they cannot trust that the supplier do not use the information given for other customers.

The other part of exploratory learning is the integration of newly generated competence into the organization. The teams have a large degree of responsibility for organizing the work themselves to deliver according to plan. As one of the functional managers put it: "*We want to have strong teams that can manage themselves, prioritize, and meet deadlines.*"

The factor *Understanding newly generated competences* refers to an informal organizational process that interprets individuals' competence on a frequent basis. The different R&D departments have implemented different ways of following up on the kinds of competences the employees develop. There is no common way of doing so; instead the different functional managers have implemented their own ways of following up on performance and what people learn. One functional manager uses what he call "job chat," which is an informal but planned meeting with each employee every second week. The meeting has no agenda but focuses on how daily work is going, how the team is working, or if there are any problems or obstacles to discuss. The "job chat" is combined with being present at various project meetings and in daily work, and these activities give the functional manager confidence that he captures the employees' competence and how it evolves. Other functional managers use similar ways of following up on employees' performance. They also look at different aspects of how the employees perform, such as how they act toward each other, who takes responsibility, and who is willing to provide help and support. One functional manager explained what he was looking for as: "*I am not solely looking at the result and performance, I am also looking at how they communicate the result and how they interact with each other.*" This could be considered a more agile performance measurement than the formal process described in the section below.

Some functional managers combine the agile performance measurement practices with weekly meetings with project managers and technical leads to capture both project status and how employees perform and in this way achieve a better understanding of the co-workers competence. One of the functional managers explained his way of working in this area: "*I follow up with the project managers*

every week for about one hour. We are talking about what is working and not and the progress of the project. In those meetings I also try to catch the employee's performance."

Performance management is the formal process by which managers assess individuals' performance. This is undertaken using a yearly performance appraisal, which is followed up on a six-month basis. The analysis shows that neither the functional managers nor the employees perceive the formal process to be efficient. The employees have different goals to work toward during the year, but these goals are viewed as a bit "fluffy" and not adding much value. A project team member expressed the weakness in the current performance management process as: "*In reality, performance appraisal are empty. It is difficult to find goals and many times you do not take them seriously."*

The factor *Competence-sharing arena* involves people gaining the ability to share new competence with others within the organization. A project manager put it: "*We are using different ways to share what we do. We use wikis, newsletters, share tips and tricks and other ways.*" The analysis shows that the company has tried to establish competence groups and other forums to share cross-functional knowledge. However, the analysis also shows that it is only the project management forum that works properly. The possible explanation for this is that project management is the one area that requires similar competences independent of the department in which the project manager is working.

Another factor is *Poor performance* where Performance is deemed "poor" if the functional manager notices that an employee is not performing in line with expectations. As one project manager put it: "*We know when people do not know.*" Poor performance could be visible, for instance, if a project team member always chooses the easiest tasks, develops software with many bugs, or always is late in delivering. The analysis shows that project managers and functional managers tend to look at poor performance rather than good or very good performance.

Learning from projects refers to how new competence developed in projects is understood and transferred to other projects or to the organizational knowledge base. The analysis shows that the organization does not properly track projects in terms of what people have learned within the scope of the project. This follow up is performed in the functional area. However, the projects employ two different ways of summarizing the project or project stages. The Scrum teams have retrospective meetings after every sprint meeting, examining how the sprint went. Projects using more traditional project methods use lessons learned to address this aspect, but again they focuses on the process rather than what the project and the project team members have learned. One of the project manager explained the lessons learned activities in his projects in the following way: "*In the end of the project we have a meeting where we focus on three things: 1. How we feel after the project. 2. How did we work with the activities in the project? 3. What could we have done better?"*

The *transparency* factor concerns how transparent projects are with regard to information sharing on the status and knowledge in the project, both between projects and between the project and the parent organization. Scrum supports transparency in relation to project status and what every team member is working on using whiteboards located in the central part of the different offices. One department that works according to traditional project methods has adopted the same philosophy of transparency, which has led to an improvement in that everyone knows the status of each project and what the different team members are working on. The information is updated weekly. One of the benefits is that it is clearer "who knows what," which can be related to the competence concept. The responsible functional manager explained the difference in the following way: "*We placed whiteboards in the open area in the office. Three times every week we update the status on resources, the projects and the programs on the whiteboards. We have stand-up meetings in the open area every week where everyone can participate. In the meetings we do a walk-through of all projects, and we also look at the resource situation. It is transparent and visual and has improved our communication considerably.*"

The factor *Preserve competence* refers to the process or activity of documenting solutions, services, and products in such way that others understand how the solutions were reached. An unspoken part of the culture is that "*you shall not document too much"*, which could be seen during observation*s.* This could be related to Scrum, in which documentation is kept to the minimum. Some functional managers would like to have more documentation to make tacit knowledge explicit and thus ensure that knowledge is

preserved, or as a project team member put it: "*The new functional manager wants to improve knowledge sharing by documenting more. Today, the knowledge is in the individuals' heads. But I do not think we should over document things.*"

Based on the analysis, the exploratory learning capability is constituted by the factors given inTable 1. The factors in the table are weighted in descending order based on how often they occurred in the interviews, while all sources of evidence have been used in the analysis and the description of the factors. The fourth column in the table summarizes the number of times the factors were mentioned by the interviewees. The first column shows the strength of each dimension, based on the number of time that is mentioned, in descending order.

TABLE 1
SUMMARY OF EXPLORATORY LEARNING CAPABILITIES

Strength	Factor	Description	# of times
1	Working with new and unknown areas	How new competence is developed through solving problems experimentation, and facing new challenges.	29
2	Understanding newly generated competences	This factor refers to an informal process in which individuals' competence is assessed on a frequent basis.	27
3	Learning by working	How competence develops by applying knowledge and experience in real working tasks. Moreover, it is about seeking information and practicing what one knows in daily work.	26
4	Participation and sharing	How learning occurs in teams, with members participating, and sharing knowledge.	23
5	Performance management	The formal process whereby managers assess employees' performance through performance appraisals development talks.	22
6	Heterogeneous environment	How learning occurs in a heterogeneous environment in which people with different competences collaborate.	18
7	Group learning	How people learning in groups through sharing, feedback, reflection, and discussion.	17
8	Positive attitude	Having motivated people with a positive attitude towards problem solving and new challenges will increase learning and performance.	16
9	Competence-sharing arena	An arena where people share new competence with others within the organization.	16
10	Competence development	The formal competence development planning process.	14
11	Poor performance	How poor performance (performance not in line with expectations) is measured in the organization rather than acceptable, good, or excellent performance.	12
12	Time and space	How the degree of freedom the employees have to share knowledge, test new ideas, or arrive at the best possible solution for a problem.	10
13	Learning from external sources	The organization's absorptive capacity. How the organization can learn from external sources.	10
14	Learning from projects	The transfer of knowledge from projects to the line organization or to other projects.	9

Strength	Factor	Description	# of times
15	Transparency	How transparent projects are in information sharing regarding status and knowledge in the project, between projects, and between the project and the parent organization.	9
16	Preserve competence	Documentation of products, solutions or other activities in order to preserve the competence in the organization.	3

Having described how the organization works with exploratory learning, we continue by considering how the organization works with exploitative learning.

Exploitative Learning Capabilities

Exploitative learning takes place when newly generated competence is combined with existing and utilized in new projects or other value creation activities (Medina & Medina, 2015).

The different departments have employed many new co-workers in the last five to ten years because of the firm's continuous organic growth. During the same period, not many people have left as people like working for the company. One of the main reasons is the strong culture and that the recruitment process is focused on employing people that fit within this culture. This has also meant that the different departments have grown in line with the company, and that employees in general do not move between departments or across functional borders. The result of this is a rather fixed functional hierarchy with "silo thinking." One of the project leaders answered the question if it is common to move between departments as follows: "*No, it is not common, at least not in our department. If you do not like it here then you will move elsewhere, but normally, people like to work here and stay. I think it is the same for other departments."*

Breaking down exploitative learning, we obtain the areas described below.

Internal mobility represents the planning and process by means of which people can move to new positions within the organization in which their competence can be better employed. The analysis shows a contradictory situation regarding internal promotion. There is a common feeling that the managers encourage job rotation but the fact is that people do not move across functional borders. All open positions are available on the intranet, and people are free to apply. Asking people about internal promotion and job rotation, the response in several cases was that "*The company encourages job rotation but no one from our department has moved on to another department.*" The explanation could be that the culture values the individual autonomy, meaning that it is up to the individual to apply for an open position. On the other hand, the strong team feeling and silo thinking prevent people from moving to another department.

Nor does the company work with talent management or identify future potential technical and functional leaders, even if the HR department would like to try at least a light variant of talent management. A HR business partner expressed her view: "*The culture says that no one shall stand out and because of this it is not easy to use the word talent. We have not worked with talent and succession planning when the career is the individual's responsibility. But I would like to see more talent management, it is a way to find and develop talent leaders*."

Functional managers understand the value of job rotation and internal mobility, but as one functional manager remarked: *"I am working so hard with external recruitment to be able to deliver according to plan, so I do not want to lose my employees to other departments."*

The factor *Transfer competences* refers to the actual transfer of new competence from projects or activities to the parent organization so that it can be used further. *"The knowledge is in the people's head"* was a project manager's simple explanation. People within the team share knowledge and thus preserve the knowledge in the team. The organization is primarily working with tacit to tacit knowledge transfer with a low degree of documentation as a project manager put it: "*We are not good at documentation, which is a part of the culture*". The agile project methodology, where Scrum is the most

common, supports knowledge sharing and neglects documentation (Saddington, 2012). The statement that agile project methodologies facilitate knowledge transfer is supported by two functional managers who both emphasized: "*Agile methods facilitate knowledge transfer*".

Mapping competences refers to how competence is categorized and mapped. The analysis shows that HR business partners and managers do not want to categorize employees other than according to different levels on a career ladder. The organisation operates with few roles, such as project manager and engineer, and has four or five-step career ladders connected to different roles. As described by an HR business partner, the ladder carries role labels: *We do not put figures on things, we do not want to assign a person as 2 or 3; we want to have the name of the step on the career ladder."* Thus, the steps on the project manager career ladder are, for instance: *trainee*, *project manager*, *senior project manager*, and *principal project manager*. To be an expert engineer, values other than deep knowledge are promoted, for instance, the ability to help others and make them more knowledgeable. To climb to the higher positions on the career ladder, one has to be nominated and approved by the management team.

The factor *Managing competence gaps* relates to how the competence gap is managed through competence development planning, recruitment, sourcing strategies, and organizing. The teams remain stable, meaning that the necessary competence is known and changes slowly, with any gaps tending to be small. A functional manager explained how he works with closing competence gaps as follows: "*If we have a gap, we try to either develop one of the employees to fill the gap or recruit someone with the right skills. Normally, it is known technology.*"

Strategy for internal/external competence base describes which competences at a strategic level will be internal to the organization and which competences will be sourced externally. The management has a strategy to develop as much as possible in house with its internal workforce. One of the project managers expressed his view of having competence internally such as: "*We can deliver faster if we do it internally*".

The factor *Identifying key competence* describes how the organization's key competences are identified, assessed, and reconfigured. The analysis shows that the concept of key or core competence is rather unfamiliar in the organisation. Rather, it is more that functional managers in the organization have a feeling for what kind of competence is needed to execute the project portfolio for the upcoming 12 months. However, they do not consider what competence might be needed over a time horizon longer than 12 months. A functional manger explained her view as follows: "*We do not talk in terms of key competence, we talk about basic competence*", while a project manager put it, "*We do not explicitly talk in terms of key or core competence, but we have a feeling for what we need."*

The other part of exploitative learning is when the competence is used in new projects or other value-creation activities, which are in line with the organisation's strategic goals.

The roadmap controls what solutions and products the organization develops and when. Usually, a product is released two to four times per year with new functionality. The roadmap is initiated by the product management department and is originally based on the business plan. The time horizon of the roadmap is three years, but it is only developed at a detailed level for the forthcoming year. Twice a year, the roadmap is reviewed and updated by the product managers, and at the same time it is broken down into projects that could be considered a portfolio. A product manager summarized the process in the following way: "*The roadmap has a three years horizon but only on a detailed level for the next year. Once per year we update the business plan resulting in an updated roadmap. Twice a year we review the roadmap and break it down to projects*". The roadmap is at what product management describe as the "feature" level. Although the roadmap is fixed for six months, and the market demands change faster, the projects do not follow the roadmap to 100 percent. Rather the projects, the functional manager, and the product manager agree on the project scope and prioritization concerning the functionality to be implemented within the scope of the project. One of the product managers expressed prioritization in the following way: "*The world is constantly changing and we have to adapt to change. In many cases, we have also higher ambition than we can deliver. The final prioritization is made by me and the Scrum team within the scope of the sprint.*"

The first factor is *Allocation of competence* that refers to how competences are allocated to different projects. The analysis shows that allocation of competence depends on the previous identification of the

competences needed to fulfil the business goals and project needs. The projects are initiated based on the roadmap. A functional manager explained the processes as: "*The roadmap controls the releases. Product managers express what they want to do based on the roadmap, and we at R&D answer with what we are able to do with available resources. What we want to do and what we think its possible to deliver with available resources, make the high level plan and are the basis for prioritization."*

Project portfolio management describes the way in which portfolio of strategic projects is organized and managed. Project portfolio planning has an impact on the project outcome through the method of project initiation and control. Moreover, it has an impact on competence utilization as project portfolio planning provides an overall picture of how competence is allocated to the different projects. *Project portfolio management* is based on the roadmap that is revised twice a year. The organization tries to have short (three to six months) or medium-run (six to twelve months) projects to provide greater flexibility in terms of prioritization. The prioritization of different projects is managed by the product manager and the functional manager for the particular product area in rather an informal manner, or as one functional manager explained it: "*The product manager and I discuss the roadmap on a frequent basis and decide together which projects we are going to start, and if we need to reprioritize among the ongoing projects.*"

The factor *New resource introduction* refers to how new resources are introduced into the work in an efficient way. There are two introductions: first the formal introduction that is managed by HR and the functional manager, and second the introduction to work that is carried out by the project or the functional team.

In general, the team has the responsibility to introduce new resources to the working tasks. A more experienced co-worker is normally appointed as mentor to the new resource. A functional manager concisely expressed his way of introducing new resources: "*Into the Scrum team, they will take care of him or her.*" The combination of using agile project management methodologies and a culture where processes and documentation have low priority, the introduction of new resources is made based on tacit to tacit knowledge transfer or what Nonaka (1994, p. 19) calls "socialization".

Recruitment describes the actions of employing new co-workers and the company engages in extensive recruitment though the organization has grown fast. The respective functional manager is responsible for recruitment and manages the recruitment process. The functional manager is usually focused on the technical knowledge and experience as well as the personal capabilities. Technical knowledge is important because of the nature of the work in terms of engineering and software development but as describe above, the company highly values people that fit into the organizational culture.

The factor *Planning competence* refers to how responsible people in the organization identify and plan which kinds of competences are needed to execute the projects in the project portfolio. Different aspects such as the ability to manage complexity, the ability to learn, and social capability are valued in achieving a high-performing team. One of the functional managers explained his way of looking at competence planning as, "*When I am recruiting new resources, I am mainly looking for people with broad competence which gives me flexibility.*"

The last factor is *External competence*, which is brought in primarily for two reasons: to fill gaps in the organization or because of a lack of competence in the organization. The organization does not use a great deal of external competence. A project manager expressed his view of external resources in the projects in the following way: "*We use external resources to fill holes, and they are treated like the employees.*" Thus, when competence is lacking in some areas or in areas in which it has decided not to have specialist competence internally, the gaps are filled with cooperation with suppliers that have such expert knowledge.

Based on the analysis, the exploitative learning capability is constituted by the factors given in Table 2. The factors in the table are weighted in descending order based on how often they occurred in the interviews, while all sources of evidence have been used in the analysis and the description of the factors. The fourth column in the table summarizes the number of times the factors were mentioned by the interviewees. The first column shows the strength of each dimension, based on the number of time that is mentioned, in descending order.

TABLE 2
SUMMARY OF EXPLOITATIVE LEARNING CAPABILITIES

Strength	Factor	Description	# of times
1	Allocation of competence	How competence is allocated to projects, linked to strategic goals. The importance to allocate competence rather than resources.	51
2	Internal mobility	Planning and process allowing people to move to new positions within the organization in which their competence can be better employed.	46
3	Project portfolio management	How strategic activities are organized into a project portfolio.	37
4	New resource introduction	How new resources are introduced into the work in an efficient way.	35
5	Recruitment	How recruitment of employees is connected to what the organization need to fulfil organisational goals.	31
6	Planning competence	How the organization identifies and plans which kinds of competences in relation to the project portfolio. This factor has a relationship to the competence allocation factor.	22
7	Transfer competences	The transfer of new competence to the line organization so that it can be used further.	19
8	Mapping competences	Mapping and categorizing of competence.	14
9	Managing competence gaps	Competence development planning, recruitment, organizing, and sourcing strategies in order to close competence gaps	13
10	External competence	Evaluation and selection of external competence sources such as suppliers, contractors, etc. in order to fill competence gaps.	13
11	Strategy for internal/external competence base	Establish a strategy for which competences that will be internal to the organization and which will be sourced externally.	11
12	Identifying key competences	Identification, assessment, and reconfiguration of the organization's key or core competences.	10

DISCUSSION AND CONCLUSIONS

The case study using the learning strategies (Medina & Medina, 2015) as a framework to assess the link between an organisation's capacity to manage competence and its capability to deliver innovative projects in line with market needs

One important finding is that the organizational culture has a significant impact on an organisation's learning capabilities. The organizational culture was shown as strong and clear. The founders realized the importance of a clear and strong organizational culture, and their values became the DNA of the organization. This is in line with Flamholtz and Randle (2011) who argue that cultural DNA is generated when the personal and professional values of the founders define the organizational culture of the company. An organizational culture that is an asset for the company, clearly understood by the people in the organization who then behave in line with the organizational culture, can be considered strong and functional (Flamholtz & Randle, 2011). Almost every manager talked with or observed share relatively common values and behaviours and new employees are quick to adopt these values, which Kotter and Heskett (1992) describe as a strong culture.

Another interesting finding was that the team in general is of high importance, especially in the departments that operate according to the Scrum methodology and in which the teams show a high degree of self-organizing. In the interviews, several interviewees expressed the importance of the team, which

was viewed as more important than the individual team members. The analysis shows that team importance has an impact on job rotation and internal promotion. In the description of the Fundamental Interpersonal Relations Orientation (FIRO) model, Schutz (1958) defined the openness phase as one in which the team members feel trust in the group, are able to express both negative and positive feelings, are open to discussing most topics, and have a strong sense of loyalty to the group. Furthermore, the members feel secure, know that everyone is appreciated, and show great faith in each other. Several of the teams showed strong feeling and loyalty for the team, which is in accord with Schutz's (1958) description of the openness phase. This can be explained by two factors. First, Scrum as a development method supports a self-managed team that works through retrospective meetings in which members' feelings and reflections are discussed. Furthermore, the team relies on everyone taking collective responsibility and working close together to reach the organizational goals. Second, two of the core values, "*act as one*" and "*always be open*," strongly support working together and building loyalties. As the organizational culture is strong and functional, and the firm actively recruits people who will fit into the culture, the employees become loyal team members. These two parameters could explain why teams are strong, exhibiting a high degree of loyalty that prevents people from leaving the team and moving on to new positions or to other teams.

Looking at exploratory learning summarized in Table 1 we can see two parts: (1) the part where people develop new competence and (2) when the new competence is interpreted and understood by the other people in the organization. The most important factors are "*Working with new and unknown areas*", "*Understanding newly generated competences"*, and "*learning by working*". The study shows that new competence is explored in a strong and positive culture where the people can learn from performing knowledge-intensive work, sharing knowledge, having time to innovate, having a positive attitude to work and being able to experiment. Furthermore, the study shows that the organizational leaders interpret new competence by being close to the people working in the organization instead of traditional performance management activities. This gives raise to a more agile view of performance management, which we call "*agile performance management*" in which leaders and managers have a continuous follow up of employees' performance instead of having yearly appraisals. An interesting finding within the area of exploratory learning capability is the organisation's weakness in absorptive capabilities based on the distrust to suppliers and other external parties.

Also for exploitative learning summarized in Table 2**Error! Reference source not found.** we can see two parts: (1) transforming new competence into the organizational competence base and (2) utilize competence in new projects or other value-creation activities. The most important factors in exploiting competence are *"Allocation of competence", "internal mobility"*, and *"project portfolio management"*. When exploiting competence in an efficient way the organization need to understand which competences that are available, utilize them in an efficient way in a project portfolio where organizational leaders have the ability to take decisions based on accurate information. The studied organisation uses a roadmap as the basis for what is going to be developed. The company do not sell direct to end-user, instead it works with partners in 179 countries. The role of the product management organization is to work close to end-customers and partners, and in this way capture market trends. As the market conditions might change fast, the product manager and the development team reprioritize what to be included in the project, which in most cases are managed using agile project management. Also the technical architects have direct contact with the partners which leads to close cooperation and shorten information paths. In this way, the organization can quickly adapt to fast-changing market conditions, demonstrating the organisation's adaptive capability as described by Biedenbach and Müller (2012), and Wang and Ahmed (2007).

To achieve sustainable competitive advantage, a company need to balance incremental and radical innovation (Eriksson, 2013; Lin, 2013). The studied R&D organization mainly works with incremental innovation though they continue to add on new functionality to delivered products meaning enrichment of already known knowledge. They short time horizon, 6 – 12 months also lead to incremental innovation focus. The management team had realized this fact and established a new organisation called "New Business" in which development of future products aim to take place. This to reach what Eriksson (2013)

and Lin et al. (2013) call *innovation ambidexterity* which refers to when an organization simultaneously achieves radical and incremental innovation.

The purpose of the current study is to explore the link between an organisation's learning capabilities and its capability to deliver innovative projects in line with market needs. To answer our three initial research questions:

1. The factors that enables generation of new competence in an organisation are described in Table 1.
2. The factors that enable exploitation of competence leading to an organization delivering innovative projects are described in Table 2.
3. The studied organisation show the following ways of quickly adapt to changing market conditions; a) product management and technical architects work close to partners and customers to capture information market needs, b) the project team together with the product manager use agile project management methodologies to fast re-prioritize project scope. However, the short time horizon and the built on existing technology lead to focus on incremental innovation.

For practitioners, the identified underlying factors constituting exploratory and exploitative learning capabilities can be used to effectively by:

1. Generate new competence by focusing on different factors of exploratory learning capabilities presented in this study.
2. Utilize newly generated competence in new development projects or other value-creation activities in the organization

Moreover, practitioners can also benefit from the outcome of the study to understand the impact of a strong and open culture where knowledge is shared and people have the ability to experiment and learn from problem solving and working.

In addition, having an agile performance management perspective, organizational leader will have a deeper understanding of which new competences the employees are developing, and also have a continuous follow up performance.

A theoretical implication is the deep analysis of exploratory and exploitative learning capabilities based on the study of a knowledge-intensive organisation. Furthermore, the study links competitive advantage to an organizations capability to generate and utilize new competence based on a strategic learning approach.

The strength of the current study is deep analysis of five different departments in the R&D organization of a fast-growing company considered to be innovative. The study also combined several sources of evidence to provide a rigorous result.

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