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Ambidexterity and Success In the Swedish Construction Industry

Bachelor Thesis in Business Administration

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Abstract

Background: Responding to the rapidly changing landscape of the market brings about challenges that organizations need to overcome in order to survive in the long run as well as fulfill short-term goals. Organizations that have concentrated only on the past and not on the future, or vice versa, have more than often failed or ceased to exist. Many as a solution to these challenges have realized ambidexterity. However, to our knowledge studies regarding the impact of ambidexterity on the successfulness of an organization within the Swedish construction industry are lacking.

Methods: We collected information from the three leading Swedish construction companies; PEAB, SKANSKA and NCC through interviews and questionnaires. The analysis and measuring of the data was conducted in a qualitative manner.

Results: We found that ambidexterity plays a dominant role in the Swedish construction industry. Furthermore, the extent of impact that ambidexterity has on the successfulness of an organization within the Swedish construction industry is significant.

Keywords: Organizational ambidexterity, Exploration & Exploitation, Construction industries, Sweden

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I. Introduction

This section serves as a background to our thesis. It provides a clear context and discusses the problem in detail. It ends with the purpose and research questions of this study.

The Roman God Janus had two sets of eyes, one for looking forward and the other for seeing what lay behind. Analogous to this the modern day organizations must constantly look forward developing innovative strategies for the future while at the same time looking backward, vitalizing existing successful strategies, (O'Reilly & Tushman, 2004).

Developing an adequate strategy in today's fast changing and growing markets is an essential survival factor that every corporation established in a competitive market needs to address and take into consideration. The great extent of uncertainty that the modern business world presents due to economic instability and political turmoil, amongst many other factors, has made it crucial for organization to be adaptable. To quickly realize opportunities and adjust to the volatility of today's market is vital in order to stay successful. However, being adaptive and opportunistic is not enough. One must also utilize prior successful strategies and take advantage of existing business models. The alignment of these two aspects is what makes an organization ambidextrous, which is one of the major contributing factors to success (Birkinshaw & Gibson, 2004).

"A company's ability to simultaneously execute today's strategy while developing tomorrow's arises from the context within which its employees operate, is ambidexterity within an organization" (Birkinshaw & Gibson, 2004. p. 47).

Ambidexterity is an issue that any modern day organization needs to take into consideration and the construction industry in Sweden is no exception. Internal and external factors are continuously changing in the construction market, forcing companies to develop appropriate strategies to cope with these changes. SKANSKA and NCC are two examples of Sweden's leading construction companies that were obliged to adapt and alter their strategies (Huemer & Östergren, 2010).

I.1 Background

"To survive, organizations must execute in the present and adapt to the future. Few of them manage to do both well." (Beinbocker. 2006. p. 77)

Ambidexterity is a concept that has existed for decades, but it has not been given the attention it deserves. Ambidexterity stands on two opposite legs, exploration and exploitation. The alignment of exploring new possibilities, while at the same time exploiting current and old certainties is what creates ambidexterity (Schumpeter, 1934; Holland 1975; Kuran, 1988; Birkinshaw & Gibson 2004; O'Reilly & Tushman, 2004; March, 2010; Chandrasekaran, 2009). Although exploration and exploitation go hand-in-hand, they are explained separately in this paper to be understood correctly and they are often interchanged with innovations and improvements, respectively.

1.1.1 Exploration

Exploring new possibilities, taking risks, carrying out new research, innovation, variation, searching, varying product lines are all aspects that fall under the area of exploration (Chandrasekaran, 2009). But exploration on its own is not sufficient for success. Organizations that engage in only exploration will find themselves suffering from the costs of experimentation without any benefits. There will be a swarm of new ideas and theories, but no possibility for implementation (March, 1991).

1.1.2 Exploitation

Improving existing products, refining efficiency and product execution, refinement, and implementation are all activities that fall under the realm of exploitation. But as exploration, exploitation alone is not a process that can guarantee an organizations' success. Companies that only adopt exploitation will find themselves falling behind of their competition, becoming caught in a state of suboptimal equilibrium (March, 1991).

As mentioned, exploration and exploitation cannot exist without each other within an organization in the long run. A primary characteristic necessary for survival and thriving as a modern day organization, is maintaining an appropriate balance, one might say trade-off, between exploration and exploitation (March, 1991).

There have been numerous different stages, throughout the process of implementing ambidexterity, that have caused many structural changes within organizations (O'Reilly & Tushman, 2004). This is due to the fact that no universal formula for ambidexterity exists, and everyone, based on their own experience, should find the right balance that can serve best for the purposes of their organization (Chandrasekaran, 2009).

1.1.3 Structural Ambidexterity

The first attempts for implementing balanced exploration and exploitation within organizations are known as structural ambidexterity (O'Reilly & Tushman, 2004). It is characterised by structurally dividing exploration and exploitation in different units of the same company working independently from one another. The team members are specialists in their area and are not expected to think outside the box. The power for taking final decisions is entirely owned by top executives. In a way this separation of the two processes has an advantage for the fact that both exploration and exploitation have to be carefully planned. However, the poor relation between explorative and exploitative units has been a disadvantage and an obstacle for the connection between the existing business and the direction of innovations (O'Reilly & Tushman, 2004).

1.1.4 Contextual Ambidexterity

The disadvantage of the structural separation of the processes has led to the integration of exploration and exploitation in the same units of organizations, which implies ambidexterity on all levels, known as contextual ambidexterity (O'Reilly & Tushman, 2004). Unlike structural, contextual ambidexterity allow lower level managers to take key decisions about improvements and innovations. This of course requires more flexibility on behalf of employees and a constant open-minded attitude, or as O'Reilly and Tushman (2004) call it, ambidextrous personalities.

1.2 Problem Discussion

In today's competitive markets, organizations might feel that they have a choice of either surviving in the market or emphasize on innovation, choosing only one of these aspects is a false choice. Exploiting the market for survival has always been a necessity and exploring new opportunities has gone from nicety to a corporate necessity. As Charles Darwin said:

"It is not the strongest of the species that survives nor the most intelligent, but rather the one most adaptable to change" –Charles Darwin

(O'Reilly & Tushman, 2006. p. 77)

One can refer to Darwin's words and use them in a business context by incorporating the different aspects discussed above. The strongest of the organizations being those with better strategies for today (exploiting), while the intelligent ones being those who invest in acquiring strategies for tomorrow (exploring). The ambidextrous organizations are those with the strength

of existing successful strategy combined with innovative strategies for tomorrow, hence making them most adaptable to change. This ambidexterity will give an organization the required tools to become and stay successful since it is one of the vital aspects for organizations successfulness. Thus, it is interesting to see how an ambidextrous structure of an organization impacts its successfulness. According to O'Reilly and Tushman (2008), "being large and successful at one point in time is no guarantee of continued survival".

Two fairly recent examples of this lack of ambidextrousness are Kodak and Boeing, which were once dominant market leaders that failed to adapt to the changes in the market. Although Kodak was the leader in analogue photography, they did not manage to become accustomed to the booming digital market. Boeing had problems in its defence-contracting business and had difficulties in competing against Airbus' innovative strategies. Both companies have now lost their dominant position in their industry (O'Reilly & Tushman, 2004).

In a study conducted by Devan (2005), 266 firms were studied through the period of 1984-2004, where only a handful of organizations survived. The primary reason of this failure was the organizations' inability to adapt to the changes in the respective market, eventually leading to low performance (Devan, 2005). This challenge known as "paradox of success" indicates that while enterprises grow to become old and massive, their complexity of structure and systems resist changes (Tushman & O'Reilly, 1996, Audia, 2000). As part of the solution, business experts have suggested that the organizations should be revolutionary and evolutionary and thus ambidextrous (Tushman & O'Reilly, 1996).

As Shane and Venkataraman (2000) argued, the field of entrepreneurship is the study of how, by whom and with what influence opportunities that generate future products and services are revealed, assessed and exploited. Hence, ambidexterity shares a great deal of similarity with the entrepreneurship field. However, being ambidextrous is more than being mere entrepreneurial, as it incorporates the technique of survival (exploitation) with the art of being entrepreneurial (exploration) to give an edge of competitiveness (adaptability) to the organization in today's unpredictable market. Therefore, this paper makes a case from the perspective of ambidexterity (a sub-field within organizational design) rather than entrepreneurship.

All the ambiguity behind achieving and fostering ambidexterity in an organization to survive and be successful in today's competitive market makes this particular study interesting for us. This study seeks to find how the successfulness of an organization is affected as a result of organizations' balance between exploration and exploitation, also known as ambidexterity.

This problem raises a set of research questions that need to be addressed.

I.3 Purpose

This study intends to find the extent of impact that ambidexterity has on the successfulness of an organization within the Swedish construction industry. Success can be measured in different ways but we choose to measure it as the organization's relative growth in revenue from the last five years (2007-2011).

I.4 Research Questions

1. Does exploitation and exploration, which are the two main factors of ambidexterity, have the same importance within an organization? How are they balanced?
2. What obstacles do organizations face when trying to achieve this balance?

2 Theoretical Framework

This section presents relevant theories and models concerning the balance between exploration and exploitation. It provides details regarding the concept of ambidexterity within the construction industry.

A lot of research has been done in the field of strategy and the balance between exploration and exploitation within organizations in recent years. However, how organizations achieve ambidexterity or the prerequisites to balancing exploration and exploitation are yet to be understood through further study (Jansen, Bosch & Volberda., 2006; Birkinshaw & Gibson, 2004). We chose the Swedish construction industry, since it fits our purpose. According to the Swedish Construction Federation (SCF) there are more than 3200 construction companies in Sweden. Although many of them are local and do not compete with each other directly, there are several large-scale companies that contend on different levels. This competitive Swedish market makes it imperative for leading construction companies to be ambidextrous in order to maintain their positions. Therefore, ambidexterity is a challenge that the construction industry in Sweden faces and this will be discussed further in the thesis (Frödell, Josephson & Lindahl, 2012).

Literature on strategy stresses the importance of this balance between explorative and exploitative activities within an organization and its contribution for success. As it is stated in the previous section, in order for a company to survive and prosper nowadays, it has to master both exploration and exploitation (Birkinshaw & Gibson 2004, O'Reilly & Tushman 2004, March 2010, Chandrasekaran 2009). Falling short in one of these aspects may be fatal for organizations. Many theories developed within the field of ambidexterity, and some from the area of project management have provided a theoretical background for our thesis. Moreover, we have referred to the methods and results used by existing research papers and adjusted them for the purpose of conducting our study and interpreting our findings. This part of the thesis provides a better understanding of ambidexterity and its components in different organizations and the way it has been examined. It starts with explanations in the broad sense of the term, and gradually narrows down to the context of construction industry and the problems it faces while trying to reach balance between exploration and exploitation.

2.1 The Concept of Ambidexterity

This section provides basic explanation for the term ambidexterity, its relation to success in organizations and the way companies manage to reach and maintain this balance between exploration and exploitation. For this purpose, three fundamental works conducted in the

area of organizational strategy will be discussed as follows.

2.1.1 The trade-off between exploration and exploitation

Starting in a chronological sequence, James March (1991), talks about exploration and exploitation in terms of the resources an organization allocates between both type of activities. His work *Exploration and Exploitation in Organizational Learning* (1991) is mainly focused on the impact of the two on knowledge and learning and stresses the high importance of balance between exploration and exploitation when success and prosperity are sought in an organization.

March describes two different, rather radical, ways of distributing efforts and resources between the two processes. He claims that more focus on exploitation at the expense of exploration leads to short term benefits but self-destruction in the long run. Organizations in this case are exposed to the danger of finding themselves in suboptimal equilibrium. On the other hand March describes exploration as a process that shows results in the future, and has no concern for the present. Adaptive systems that exclude exploitation for the sake of exploring are most likely failing to benefit from all the experimenting they are engaged in, since they are losing track of the existing competences (March, 1991). Thus it is crucial to find the proper balance between both processes in order for an organization to succeed and prosper. This balance is referred to as ambidexterity and serves as a solid ground for further research within organizational strategy.

2.1.2 Ambidexterity and success

However, not all researchers agree on the circumstances regarding ambidexterity. While Christensen (1997) saw ambidextrous organization as improbable, O'Reilly and Tushman (2008) believed that ambidexterity is tough but possible to achieve under favourable conditions. As the latter authors claim, even though it is not an easy task, more and more companies today are investing on being innovative while improving processes.

Based on March's theory (1991), O'Reilly & Tushman (2004), examine different types of structures and their likelihood to contribute for success depending on the extent of balance they have reached between exploration and exploitation. They describe ambidextrous organizations as independent units, with their own structures, processes and cultures but as part of the senior management hierarchy. They are designed in a way that allows them to be significantly more effective than other structures when it comes to innovations. O'Reilly and Tushman (2004) provide a theoretical explanation for this success, which states that the structure of ambidextrous

organizations encourages cooperation within different units rather than competition.

The empirical findings they have collected prove how choosing the ambidextrous organization over other structures leads to better results when it comes to innovations. Successful innovations have been achieved in almost all ambidextrous organizations (more than 90%), while other types of structures show high levels of failure (O'Reilly & Tushman, 2004). O'Reilly and Tushman's research (2004) shows that the majority of companies that have changed their structure to ambidextrous organization have improved their performance, while those that have converted from ambidexterity to other structures usually fail.

The review by O'Reilly and Tushman (2004) concludes that ambidexterity requires high level of flexibility and objectivity on behalf of executive teams and managers. They need to be aware of the up-coming needs of the market and at the same time be able to cope with difficult trade-offs when making decisions. They should be the moving force behind ambidexterity especially in the case when team members are resistant to the changes. A clear vision should be communicated within the organization in order for a goal to be understood by everyone. This is a key component supporting the co-existence of exploration and exploitation. The conclusions of this review drew our attention to the actions undertaken by top executives, the structures they have chosen and the strategies they implement in order to achieve ambidexterity.

2.1.3 Building ambidexterity into an organization

The need for deeper understanding of the mechanisms underlying in ambidexterity, mentioned in the previous section, brought us to Birkinshaw and Gibson's review called Building Ambidexterity into an Organization (2004). It explains the correlation between ambidexterity and a company's performance. Here they introduce the concepts for structural and contextual ambidexterity, the former suggesting different units for exploration and exploitation, while the latter combines both types of actions on all levels. This work uses examples of leading international organisations and their success/failure as a result of their strategy – being either more exploration or exploitation centered. Ambidexterity here is proven to be the major influence on a company's performance, which brings it closer to our topic.

In order to gain a better understanding of the matter we had to go in deeper details and explore what defines the existence of ambidexterity in an organization. What Birkinshaw and Gibson (2004) suggest is that top executives should build a context that enables employees to release their full potential. There are four key attributes that in different combinations between each

other can define four types of organizational contexts (Ghoshal & Bartlett, 1997). These are stretch, discipline, support and trust. The combination of the former two defines a performance-oriented context within an organization, whereas the combination of the latter two represents social support. Birkinshaw and Gibson (2004) use Blake and Mouton's managerial grid (1968) to explain the four contexts (Appendix F).

The full potential of subordinates, thus ambidexterity, can be reached in the optimal high-performance context, which can be described by high levels of both social support and result orientation. However, this does not mean that an organization with a suboptimal context cannot achieve ambidexterity. Research in real world organizations shows that both burn-out (high concern for results and low concern for employees) and country club (low concern for results and high concern for employees) contexts can be transformed into high-performance by raising respectively their concern for employees or concern for production (Birkinshaw & Gibson, 2004). This theory contains a scale that helped us define the extent of result and social orientation within the organizations we are focusing on, hence the level of their ambidexterity.

2.2 Modern Views on Ambidexterity

Having provided a sufficient explanation for ambidexterity, its relation to success and its determinants, we went in further details. We found criteria for evaluating its efficiency through some of the most up-to-date literature in the field. Being relatively new, the literature provides some criticism on previous works and suggests new insights within the area of ambidexterity.

2.2.1 Ambidexterity for sustained performance

The following article "Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance" (Raisch, Birkinshaw, Probst & Tushman, 2009) can be seen as a reflection to all the research that has been done in the area of organizational ambidexterity before 2009. The authors explore four different tensions between exploration and exploitation and suggest possible directions for further research.

The first aspect of balance between exploration and exploitation that Raish et al. (2009) recognize is in terms of differentiation and integration between the two processes. They argue against radical claims that choose only one of the approaches as optimal in reaching ambidexterity. The authors suggest that in order for organizational efficiency to be achieved, both mechanisms should be considered as complementary rather than mutually exclusive. This way organizations can benefit from structural differentiation, which maintains a diverse set of competences

that can adequately respond to emerging demands (Gilbert, 2005). At the same time integration would enhance lateral knowledge across units (Gilbert, 2006; Raisch, 2008) and enable individuals to take care of both exploration and exploitation, which implies considering disparate demands (Lubatkin, Veiga, Ling & Simsek, 2006). However, balancing differentiation and integration is not an easy task. It may vary with regards to the nature of tasks that are undertaken, which calls for constant attention on behalf of top management (Raisch et al., 2009).

The second tension that Raisch et al. (2009) discuss is the one between ambidexterity on individual and organizational level. Regarding the latter, many researchers claim that ambidexterity can be achieved by giving either explorative or exploitative tasks to individuals; in separate units for each purpose (e.g. Adler, Goldoftas & Levine 1999; Benner & Tushman 2003) or in the same unit (e.g., Jansen, George, Bosch & Volberda, 2008). However, in works on structural ambidexterity the ability of individuals to balance exploration and exploitation is barely mentioned and it is only on the top levels of organizations (e.g., Smith & Tushman 2005). This leaves the dimension of ambidexterity within individual's unexplored (Raisch et al. 2009).

When it comes to contextual ambidexterity, though, individuals are seen as the driving force for balancing, because of their capability to combine explorative and exploitative activities (Birkinshaw & Gibson, 2004, Mom, Bosch & Volberda, 2007). What contributed a lot for the purpose of our thesis are the following dependencies of organizational ambidexterity on individuals' behavior and competencies that Raisch et al. (2009) have collected. Managers have to be able to manage contradictions and discrepant goals (Smith & Tushman 2005), engage in paradoxical thinking (Birkinshaw & Gibson, 2004) and take numerous roles (Floyd & Lane, 2000). Furthermore, some researchers have found a linear correlation between the following features and high levels of ambidexterity; top-down and bottom-up/top-down and horizontal knowledge flows (Mom et al. 2007), simultaneous short term and long term orientation (e.g., O'Reilly & Tushman 2004, Probst & Raisch 2005) and prior knowledge and experience in the area (Cohen & Levinthal, 1990). However, it is not easy for one person to combine equally exploration and exploitation in his/her acts (Gupta, Smith & Shalley, 2006). One reason for that can be the fact that in each personality the tendency for exploration dominates the one for exploitation to a certain extent or vice versa (Amabile, 1996).

What Raisch et al. (2009) see in this separation of ambidexterity as organizational and individual is the assumption that the overall ambidexterity of an organization equals the sum of all individuals' ability to balance exploration and exploitation. They disagree with it claiming that

there are organizational mechanisms capable of enhancing overall ambidexterity, making it reach beyond the above-mentioned sum. These are encouragement of socialization, recognition, team-building practices (Ghoshal & Bartlett, 1997) division of time between exploration and exploitation activities (Birkinshaw & Gibson, 2004) and cohesiveness of senior management teams (Lubatkin et al. 2006). These ambidexterity improving techniques, gave us straightforward guidelines for examining our target companies.

Finally, there is a tension between externalization and internalization of exploration and exploitation within organizations that Raisch et al.(2009) discuss which contributed to the evaluation of the three companies' performances. Supporters of externalization claim that the paradoxical demands of ambidexterity can be met through outsourcing either explorative or exploitative activities (Baden-Fuller & Volberda 1997, Holmqvist 2004, Lavie and Rosenkopf 2006, Rothaermel and Deeds 2004). For example, research proves that exploration on external level is more efficient than exploration conducted internally (Rosenkopf & Nerkar, 2001). At the same time there is a risk of obsolescence in the latter case (Eisenhardt & Martin, 2000).

On the other hand, research on ambidexterity so far focuses mainly within the boundaries of organizations (Benner & Tushman, 2003), for the reason that externalization may bring the difficulty of integrating the newly obtained knowledge. This hinders organizations to gain from the benefits of newly acquired knowledge, even though it is potentially effective (Kogut & Zander, 1992). What Raisch et al. (2009) suggest is equally distributing efforts between gaining knowledge from the outside and diffusing it internally, since it has to be absorbed and integrated in order for one to meet its benefits (Cohen & Levinthal 1990, Kogut & Zander 1992). Moreover, being excessively more focused on one of these processes compared to the other is likely to cause dysfunctions within the organization (Zahra & George 2002).

The conclusions that Raisch et al. (2009) drew with regard to the internal and external aspects of ambidexterity will be useful in the evaluation of our target companies. The authors claim that encouraging a diversity of strong and bridging social ties outside and inside the organization can optimize the balance between exploration and exploitation. This can improve the capacity for absorbing and integrating knowledge within a company, which are factors that ambidexterity depends on.

2.2.2 Organizing for Ambidexterity

As Raish et al. (2009), Michiel Tempelaar (2009) has also found several gaps in existing studies on

balancing exploration and exploitation in organizations, and contributes to ambidexterity literature by filling these gaps. He positions and compares three different studies with various levels of analysis, focus and theoretical grounding (Jansen, Tempelaar, Van den Bosch & Volberda, 2009; Tempelaar & Jansen 2009) and through them manages to improve several different aspects of ambidexterity as follows further.

One of them highlights the role of informal, contextual mechanisms in reaching ambidexterity. Informal relations within organizations are proven to be stronger and more persistent than formal ones, since they go beyond job descriptions (Gittell 2002; Ibarra 1993; Kellogg, Orlikowski & Yates, 2006; Tsai, 2002). In this sense they are beneficial for ambidexterity, due to their capability to integrate exploration and exploitation as if it is a single domain (Gupta et al. 2006). Informal relations enhance creativity within organizations as well (Amabile, 1996; Runco 2004), which is another stimulus for ambidexterity (Jansen et al. 2009).

A company's permeability to the external environment is also underscored by Tempelaar (2009) as a factor influencing exploration and exploitation. He states that in addition to informal internal structure, well-managed relations with customers contribute to ambidexterity as well. This is demonstrated by the growing number of companies involving customers in their innovation projects (Prahalad & Ramaswamy 2004) in order to gain a realistic understanding of the market's needs and adjust accordingly. Hence, social interaction with the external environment improves the internal efforts for integrating exploration and exploitation (Tempelaar, 2009).

Finally, Tempelaar (2009) highlights the multilevel character of methods employed in achieving balance between exploration and exploitation. That implies that there is not a single determinant for ambidexterity within a company, but numerous, on different hierarchical levels. More specifically, team ambidexterity is shaped by the combined influence of organizational context, individual characteristics and outcomes. Thus, factors on many levels are to be considered while evaluating how ambidextrous a company is.

Being a result of critical view on previous literature in the area of ambidexterity, all these new aspects that Tempelaar (2009) and Raish et al. (2009) suggest, give us up-to-date criteria for evaluation of ambidexterity within organizations. They reflect the situation in companies from the present and recent past, which makes them suitable for applying in the process of examining our target companies, and will give us most realistic results.

2.3 Obstacles for Ambidexterity

As it is stated above, one of the research questions of the thesis is looking for obstacles hindering ambidexterity. However, there has not been extensive research focusing on barriers in this area. Hence, our theoretical background will include only the realm of competition, since there are insufficient findings concerning obstacles for ambidexterity.

Wang and Lim (2012) are part of the authors who have conducted research within this field. They examine the area of value creation through social capital, the maintenance of created value through exploration and exploitation and the effects of competition on exploration and exploitation, thus created value. They claim that exploration implies returns in the long run that usually have a relatively high level of uncertainty. They also recognize the positive correlation between knowledge flows and exploration (Kang, Morris & Snell, 2007). However, knowledge transfers into an organization are negatively influenced by intense environmental competition (Auh & Menguc, 2005), a term referring to high number of competitors and/or numerous areas of competition (Jansen et al. 2006). Therefore, intense competition diminishes explorative capabilities, by hindering the knowledge flows into the organization and increasing unpredictability and uncertainty (Auh & Menguc, 2005).

Unlike Wang and Lim (2012), Auh and Menguc (2005) describe not only the changes in explorative, but also in exploitative capabilities within organizations, when intense competition occurs. Furthermore, they divide companies in two different types with regards to their preferences for balance; defenders, which are more exploitation-focused and prospectors, which are more exploration-focused (Auh & Menguc, 2005). This way we can get a more extensive idea on competition's effects on ambidexterity and relate it to a company's type and performance.

Here it is fundamental that exploration contributes more for the performance of prospector companies, while exploitation is more vital for defender companies' performance. However, in both types of organizations exploration accounts for the effectiveness of performance, whereas exploitation is proven to lead to performance efficiency only in prospector companies. However, when intense environmental competition occurs different reactions on behalf of organizations lead to different results. Higher levels of exploitation in prospectors lead to more efficient performance, while there is no negative result on effectiveness with increased exploration. Conversely, when defenders stimulate their exploitative actions lower performance efficiency is achieved, while increased exploration has no positive influence on effectiveness.

Based on their conclusions, Auh and Menguc (2005) give recommendations for maintaining high levels of performance to companies exposed to the risk of adverse environmental conditions.

This can help us evaluate our target companies' strategies for implementing ambidexterity. Firstly, they suggest that firms need to be aware of their current balance between exploration and exploitation in order to be able to reestablish it in a fluctuating environment. Secondly, managers should be highly aware that the new circumstances might be calling for a change of modes, from defender to prospector or vice versa. And last but not least, according to the needs for balance managers have to allocate resources between both sides with a high prudence.

2.4 Previous Research on Ambidextrous Organizations

The discussion provided in this section brings the topic of ambidexterity closer to the purpose of our thesis, due to its detailed description of methods and analyses used in the course of research. The first work we refer to is a PhD dissertation (Chandrasekaran, 2009) that examines the ability of several companies to maintain a competitive advantage through ambidexterity. The second one (Eriksson, 2012) concerns ambidexterity in project-based organizations, and evaluates the way it is influenced by different actions on three different levels – strategic business unit, project portfolio and project level.

2.4.1 Implications for evaluating ambidexterity

There has been a long research process conducted for the purposes of the above mentioned dissertation. Hundreds of interviews have been taken on different levels within the target organizations in order for comprehensive and trustworthy conclusions to be drawn. At the same time different techniques for evaluating ambidexterity have been used. One of them has strongly influenced our thesis by serving as a straightforward tool for dividing explorative and exploitative activities and defining their relative share within the companies we chose (Section 7.3.9).

According to Chandrasekaran (2009), after an organization gathers enough experience in certain capability, it gets trapped in it and is blinded to other available opportunities (March, 2003; Gupta et al., 2006; Holmqvist, 2004). This phenomenon is referred to as the learning myopia argument, and addresses organizations whose relative share in explorative or exploitative activities is significantly higher than the other one. Companies frequently fall into this vicious cycle because of excessive focus on one side of the trade-off (Martin, 2004; Christensen & Raynor, 2004; He & Wong, 2004). Smith and Tushman (2005) claim that the manager's ability to solve the contrast between exploration and exploitation is dependent upon the solution to balance and Chandrasekaran's (2009) empirical evidence also supports this viewpoint.

2.4.2 Ambidexterity on strategic business unit level and project portfolio level

The last article we have referred to (Eriksson, 2012), unlike most research conducted on ambidexterity, focuses on balance between exploration and exploitation in project based organizations and more specifically construction companies. This can be of great help for the purpose of evaluating the level of ambidexterity within our target organizations, since they are in the exact same industry. Eriksson (2012) provides adequate criteria for assessing both exploration and exploitation sides of project based organizations, by examining their effects on performance on three different levels; strategic business units level, project portfolio level and project level.

Firstly, Eriksson (2012) focuses on strategic business unit level with structurally separated exploration and exploitation. In construction companies this separation is most often in the shape of regular project teams taking care of exploitation and R&D departments developing innovations. However, the project-based nature of construction companies implies that recently explored knowledge takes time to be exploited and offered to the market, instead, it is implemented through the execution of regular projects which is rather time-consuming. Early studies on the Swedish construction industry have shown that decentralization and separation are obstacles for improved knowledge and innovations to be diffused within the organization because of the poor link between units (Dubois & Gadde, 2002). Hence, strong integration mechanisms on behalf of top management are hard to implement.

Eriksson (2012) goes on with examining structural separation on project portfolio level, where projects are strictly divided into either only exploration focused or exploitation focused. This way of developing innovations is very common among project-based organizations (Bosch-Sijtsema & Postma, 2009) and is even predominant over the choice of R&D departments (Blindenbach-Driessen & van den Ende, 2006). On project portfolio level new knowledge and experiences have to be spread around initially by transferring them to similar and then gradually to central for the organization projects. In other words decentralized exploration has to be transformed into centralized exploitation (Brady & Davies, 2004). However, the construction industry possesses some characteristics that do not allow this to happen easily (Dubois & Gadde, 2002). It is namely the decentralization of exploration that leads to disconnection between the project teams, which contributes for poor knowledge management and insufficient cross-project organizational learning (Knauseder, Josephson & Styhre, 2007; Pemsel & Wiewiora, in press). This is backed up by a study on Swedish construction companies, the results of which shows that diffusion of innovation is achieved five years after finishing innovation projects (Widén & Hansson 2007).

Eriksson (2012) concludes that there is a low level of exploration activities at strategic business unit and project portfolio levels within project-based organizations. He claims that even if this level is increased, construction companies would still not be able to take full advantage of their innovations for the lack of integration mechanisms that can improve internal knowledge transfers and cross-project learning. Hence, Eriksson (2012) suggest examination of ambidexterity management on project level as well.

2.4.3 Ambidexterity on project level

Exploration and exploitation in projects can be implemented in a couple of ways when it comes to sequential and structural separation (Eriksson 2012). In stable environments and projects or subsystems with scarce resources, sequential separation is more appropriate (Beckman, 2006; Gupta et al., 2006), whereas structural is preferred in dynamic environments for the sake of saving time (O'Reilly & Tushman, 2008). Furthermore, a typical trait of sequential separation in projects is that exploration is conducted initially followed by exploitation in the final stage when it is time for implementation of knowledge (Andriopoulos and Lewis, 2010; Raisch et al., 2009). Numerous studies have recognized tools for improvement of exploitation in these cases, such as formalization as a way of reducing variation in established knowledge (Jansen et al. 2006), and formal top-down knowledge flows and communication (Mom et al. 2007).

In construction industry projects, exploration is usually conducted in the design stage by consultants and architects, and then the contractors according to their prior knowledge execute the building process. There are two types of contracts; design-build where design and construction are done by the same contractor, and design-bid-build where those who are in charge of the design are not the same as those in charge of building. However, both cases do not enhance ambidexterity (Eriksson 2012). In design-bid-build contracts, there is a separation of designing and building and in most cases exploration in the first phase exceeds knowledge in the second phase, which leads to low efficiency (Eriksson, 2010) and prolonged process (Pietroforte, 1997), due to the fact that adaptation should be implemented (Kadefors, 2004). In design-build contracts on the other hand, exploitation is enhanced for the fact that the design is conducted according to existing knowledge. Time and resources are saved, while buildability is increased (Tam, 2000). However, this short-term efficiency is all at the expense of long-term exploration, since contractors have no incentives for innovations (Ahola, Laitinen, Kujala & Wikström, 2008). Therefore, both types of contracts are harmful for ambidexterity in their own way.

Ambidexterity on project level is also influenced by the nature of project teams in

charge of execution (O'Reilly & Tushman, 2008). Diversity within the team contributes for creativity and innovation, while cohesiveness is related to mutual understanding and efficiency (Andriopoulos and Lewis, 2010; Beckman, 2006). Consequently, Eriksson (2012) states that heterogeneous teams are rather explorative, whereas homogeneous teams are exploitative. Furthermore, research proves the positive correlation between teams with prior experience together and their exploitative capabilities (Andriopoulos & Lewis, 2010; Beckman, 2006; Lavie & Rosenkopf, 2006; Lin, Yang & Demirkan, 2007). What we can gain from these insights is practical straightforward criteria for evaluation of ambidexterity within construction companies with regards to the nature of project teams.

2.4.4 Implications for improving ambidexterity

Eriksson (2012) infers that the above-mentioned traditional ways of carrying out construction projects suppress explorative capabilities, while at the same time do not allow exploitation at its potential. This conclusion calls for implementation of new ways of operating into organizations from the construction industry, more specifically, mechanisms of contextual ambidexterity, since structural and sequential separations are not sufficiently beneficial. Studies have proven contextual ambidexterity to be more suitable than structural and sequential for environments with scarce resources (Beckman, 2006) for it reduces the costs of supervising, controlling and coordinating employees (Gibson & Birkinshaw, 2004). This is achieved by incentives encouraging subordinates to divide their time and efforts between conflicting demands of exploration and exploitation.

The first mechanism for integration of exploration and exploitation that Eriksson (2012) suggests is joint specification. It can be implemented in the design and building processes in order to strengthen their interrelation. The improved knowledge flows between project actors would result in enhanced flexibility, adaptation and coordination in project execution. Early involvement of contractors, design and construction is proven to reduce costs and duration of projects due to improved build-ability (Errasti, Beach, Oduoza & Apaolaza, 2009; Rahman & Kumaraswamy, 2004), which contributes for ameliorated exploitation. At the same time it facilitates exploration by easier knowledge transferring and cooperation in problem solving between design and construction actors (Caldwell, Roehrich & Davies, 2009; Ling, 2003). Hence, joint specification would also be part of the criteria for evaluating our target construction companies, for it is a factor with a positive influence on ambidexterity (Eriksson, 2012).

The choice of partners in construction projects also hides factors that ambidexterity depends

on (Eriksson, 2012). High levels of technical competence, collaboration and desire for change within a team are highlighted as driving forces for exploration (Eriksson, 2008a; Pesämaa, Eriksson & Hair, 2009). Accordingly, focusing on expertise, trust and capabilities while selecting partners, facilitates the exploration side of ambidexterity, but when price is also taken into consideration, both sides of the balance are improved (Bosch-Sijtsema & Postma, 2009).

As already stated above, fixed-price payment, which characterizes the construction industry, is a bad influence on ambidexterity, due to suppressing exploration and focusing mainly on exploitation (Eriksson, 2012). This calls for other ways of payment such as remuneration or incentive-based payment. In the case of remuneration, the contractor is paid for all incurred expenses, which implies that new innovative ways of operation can be developed if so demanded by the client (Eriksson, 2012). But there is a downside of this method, since some innovations may reduce costs, thus the amount of remuneration, which is not what most contractors aim for (Barlow, 2000). A suggestion for these cases is combining remuneration and incentive-based payment for the sake of sharing profits between actors in the process. Research shows that this would improve both sides of the balance between exploration and exploitation by facilitating innovative design solutions and effective adaptation (Barlow, 2000; Bayliss, Cheung, Suen & Wong, 2004; Pesämaa et al., 2009). Incentive-based payment alone is also proven to be an ambidexterity enhancing method. It improves short-term efficiency and long-term innovations (Eriksson & Westerberg, 2011) by setting a common reward related to the final output, which requires focusing on the overall performance (Jansen et al., 2008; O'Reilly & Tushman, 2008 & 2011). Although these payment methods are not very popular within the construction industry, their positive impact on ambidexterity is a fact.

A number of collaborative tools that can be used in construction projects are also a part of the factors contributing for higher ambidexterity. Among them are the following; joint objectives obtaining simultaneous achievement of multiple goals (Crespin-Mazet & Ghauri, 2007; Swan & Khalfan, 2007), team-building activities stimulating socialization between partners (Bayliss et al., 2004), joint-IT tools improving exploration capabilities (Gann & Salter, 2000) by enhancing communication and information transfer (Eriksson, 2008a; Woksepp & Olofsson, 2008), joint risk management (Osipova & Eriksson, 2011; Rahman & Kumaraswamy, 2004) and joint office sites for more effective communication, through more frequent meetings in person (Olsen et al., 2005). Despite not being commonly used within the construction industry, these tools of collaboration have the capability to stimulate ambidexterity (Eriksson 2012).

In conclusion, this article (Eriksson, 2012) has contributed a great deal to our thesis, due to its focus on a closely related topic, namely ambidexterity within construction companies. It goes in deep details about the common practice in the industry, and its outcomes. The article provides examples of factors with different impact on exploration and exploitation and the balance between them, which served us as a guideline in the data collection process as well as criteria for assessment in the analysis part.

3. Methods

This section presents the approach of our study and the methodologies.

The choice of which method(s) one is going to engage when leading an academic paper is very significant. It is a systematic way, where one uses a set of rules, procedures and pre-determined measures to help in acquiring the empirical data.

3.1 Data Collections Methods

According to Vedung (2009), there are three basic approaches in collecting descriptive information: document (reading documents with information about the subject), interview/questionnaire (talking with various individuals familiar with the subject) and observation (observing the subject in action).

We used a combination of interviews, the company's documentations (annual reports), and questionnaires in this thesis to answer its research questions. Due to the nature of our research questions, our study will have a qualitative orientation.

3.2 Interview

Since this study seeks to qualify rather than quantify the topic of research, we conducted semi-structured interviews. We felt that by conducting these semi-structured interviews we would be able to receive detailed and clear information regarding our topic of research. The interview questions (appendix B) were sent to the key persons at each of the three companies via e-mail, prior to the interview.

After the preliminary process of the interview material, we deemed it necessary to return to the respondents with a number of supplementary follow-up questions (appendix C). This was the case for all three companies: SKANSKA, PEAB and NCC.

3.3 Questionnaire

To increase the validity of this study, we used Blake and Mouton's (1968) chart. This chart measures the extent of ambidexterity present in a corporation. More specifically, the chart is composed of a set of questions rated on a scale of 1-7 regarding performance management context and social support context. This in turn is used to measure the level of ambidexterity of an organization. The chart was a part of the interview questions. We used the incorporated graph

(the managerial grid seen in appendix F) of this chart to analyze the information given by the interviewees in the chart. It served as a tool for evaluating how valid the companies' perception of their own ambidexterity actually was.

3.4 Secondary Data and Documents

Even though this study was based on primary data collected through questionnaire and interview, we also attained information and knowledge through secondary data. The secondary data consisted of a summation of past studies and literature on the given related topic (s). The employed literature books and articles were cautiously selected through group discussions.

In order to develop our understanding of our target group, we extensively studied the three companies' annual reports as well as information published in their websites. This was a great aid in developing both the primary interview questions as well as the follow-up questions.

3.5 Target Group and Limitations

This paper studied the impact of ambidexterity among leading construction companies in Sweden. According to the SCF, there are more than 3,200 construction companies in Sweden. However, due to limitations such as time and resources, we confined our study to three leading construction companies in Sweden; SKANSKA, PEAB and NCC. We further studied specifically the impact of ambidexterity on only one aspect of the organization, the successfulness of the company.

3.5.1 Further Limitations

We additionally limited this study by measuring successfulness of each of the three companies by the relative growth in revenue in the Swedish market, on a year-to-year basis starting 2007 and ending 2011.

The year-to-year growth in revenues gave us a clear idea of the progressive growth of the three companies. With an average growth percentage from the past five years we have the time span necessary to diversify the sample data and minimize the errors in our analysis and evaluation.

The data about revenues in construction and civil engineering business in Sweden was easier to collect for Skanska and NCC since their annual reports contain detailed description of the financial performance for each geographical region. The case with PEAB was not the same, since their public documentation does not provide such deeply segmented information. Revenues from

the construction and civil engineering business had to be calculated separately according to their percentage of action in Sweden and then summed up. This was done for every year individually, due to the fluctuating number of projects PEAB had undertaken relatively on national and international level over time.

Measuring the growth on the return on investment (ROI) or market capital were two other factors that could have been used as indicators of success. However, our study is strictly confined to Sweden, and data related to these two factors were available only for the organizations as a whole, not particularly for Sweden.

3.6 Approach to Data Collection

To establish a foundation for this study, each of the three companies were extensively studied and analyzed (discussed in detail in section 3.4). This helped in developing and specifying the purpose and research questions. This was led by the examinations of several academic articles, the companies' annual reports and further literature that aided in developing the interview questions as well as charts and graphs that assisted in the collection and analysis of data.

Series of phone calls were made to SKANSKA, PEAB and NCC to identify key individuals that could best answer our questions. Håkan Danielson head of the marketing at SKANSKA, Peter Polland regional business manager and Anna Åkerstedt from human resources at PEAB and Janne Byfors head of technical development at NCC, were the three key persons that aided us in our study. A letter (appendix A) was then sent via e-mail to each of these individuals describing our study and its purpose. We, further, stated that we will follow up the email with a phone call to schedule an interview in one week.

Both SKANSKA and PEAB agreed on meeting with us for interviews. However, due to NCC's busy schedule, we were only able to conduct a telephone interview with them. The interviews were approximately 40 minutes each, where a dialog was established in regards to the semi-structured interview questions (appendix B). Each question was asked respectively, thereby a conversation surrounding the topic evolved. The interviews were then transcribed into a word document, to then be processed and used in the empirical data. We developed a set of follow-up questions (appendix C) after processing the data collected from the initial interviews. Since the interview with SKANSKA was conducted on a much earlier date (about two weeks) than the interviews with PEAB and NCC, the follow-up questions were incorporated with the initial

interview for both PEAB and NCC, and SKANSKA received the follow-up questions two weeks subsequent to the initial interview by email.

The questionnaires, which were handed out prior to the initial interviews, were collected concurrently with the answered follow-up questions from SKANSKA. PEAB and NCC were asked to provide us with the filled in questionnaires within a week of the initial interview. The number of questionnaires collected varied amongst the three companies. We received twelve from PEAB, two from NCC, however only one from SKANSKA due to their hectic schedule and heavy workload. The overall score was summarized and plotted in the managerial grid, which evaluated the level of ambidexterity the companies gave themselves (elaborated in more detail in the analysis).

3.7 Data Processing and Analysis

Due to the qualitative nature of the collected data in this study, we implemented a qualitative text analysis to interpret the information. In order to adequately analyze the collected data, we used two different charts. The first one was adopted from the dissertation of Chandrasekaran (2009). We then, developed this chart to measure the degree of the explorative vs. exploitive nature of the companies. Industry standard activities/results were grouped under exploitation while unique (extra-ordinary) activities/results were grouped as exploration. It should be noted that exploration today might very well be exploitation in the future since this categorization of activities are time 'dependent' whereas 'independent' of the degree of involvement. Additionally, we also made use of the chart made by Blake and Mouton (1968), as stated above. The graph was plotted with the average score calculated from the results for each company.

3.8 Ethical Considerations

This study was conducted within the Science Council's four main general ethical requirements for research in the social sciences and humanities. These requirements are as follows (Bloom & Moren, 2007, p 80).

Openness requirement - This means that the researcher(s) must, when in an ethically sensitive situations, inform the concerned parties about the activities that will be undertaken by the researches as well as receive the necessary consent. We determined that this thesis is not in an ethically sensitive situation.

Self-determination requirement - This means that the persons that are involved in an

investigation should themselves be entitled to decide whether, for how long and under what conditions they will be involved. As we examined only public documents issued by a Swedish authority, we did not find it necessary to receive a permit (formal approval) to conduct this study

Confidentiality obligations - This means that participants should have the utmost confidentiality and that their personal data should be stored in such a way that unauthorized individuals cannot benefit/take advantage from them.

Autonomy requirement – This means that the collected information about any individuals involved in a study may be used only for research purposes.

A great degree of regard went into making sure that the proper discretion and principals were applied to this study. We took into consideration these four requirements during this whole study.

In the initial letter and phone calls to our target groups, we stressed that the participation was voluntary. We also declared the purpose of our study and the possible use of this information. Furthermore, with their consent we made it clear that the findings of this study would be published as well as that their names (both personal and company) would be seen.

To further increase the validity and trustworthiness of this study we sent the transcribed interviews (to make sure that the interviews were processed correctly) to the participated companies. In addition, we have promised sending an exemplar of the final thesis to each of the companies.

3.9 The Studies Audience

It is vital in every research to point out the audience of study. In other words, why are we conducting this research and who are the potential users of the results? It is obvious that this study is an academic thesis in business administration. Furthermore, the result of this study can have a variety of audiences. It can contribute to the current debate on ambidexterity. Moreover, the construction business may have interest and use of our findings.

3.10 Method Discussion

We are aware that the power of this study is rather low due to the low number of companies, interviews and questionnaires (charts) involved. Therefore, the results of our study should be interpreted with caution. Hence, the conclusion of our study should be viewed as of suggestive

nature, rather than representative. One should not see the outcome of this study as representative of the whole construction branch.

However, the choices of mixing different data collection instruments, namely using documents, interviews and questionnaires were appropriate for this study.

3.1 | Empirical Findings

The following three chapters (4, 5 & 6) present the data and information obtained from our investigation. Three leading construction companies of Sweden i.e. SKANSKA, PEAB & NCC were interviewed alongside the study of information of respective companies which are publicly available. It will provide all the relevant information gathered throughout this entire study, which will later be used for the analysis and then conclusion.

4. SKANSKA

SKANSKA is a development and construction company based in Solna, Sweden that operates in the Nordic region, Central Europe, UK, North America and South America. SKANSKA was established in 1887 as a producer of concrete products. However, it soon entered the construction industry and played a vital role in the construction of the Swedish infrastructure. SKANSKA is listed on the Stockholm stock exchange. It began to internationalize in the 1950s and entered the US market in 1971. SKANSKA was ranked 10th largest contractor in the world in 2008 (ENR, 2008). SKANSKA operates in construction, residential, commercial and infrastructure development (SKANSKA, 2012). All the data presented below were acquired through personal interview as well as email correspondence with Mr. Danielson of SKANSKA.

4.1 Context of Ambidexterity

SKANSKA is a line organization meaning the command line is carried out from top to bottom and is maintained by four support departments; Human Resource, Finance and two Business Development departments where R&D as well as project evaluations are carried out. There are three business divisions within the organization: private construction, public construction and asphalt and concrete. The private and public construction division lack HR and R&D departments within the division, but are assisted by support organizations. Some of the supports within R&D departments only concentrate on green projects.

4.2 Mode of Ambidexterity

SKANSKA emphasizes to a great extent on its customers and their needs. Meetings and dialogues are conducted with major real estate companies well ahead of a majority of their projects have been initiated. SKANSKA keeps its big customers in close contact and invests in relationship building. The reason behind this sort of collaboration and relationship building is to ensure that the upcoming project of their customers will consider SKANSKA as their first choice for future projects. This whole phenomenon of trying to stay ahead of competition and grabbing opportunities even before their inception is called “a year ahead” in SKANSKA.

Danielson believes that NCC, PEAB and SKANSKA are competing on the same level in exploring new market opportunities, however SKANSKA is slightly ahead of its competition. Green projects and sustainability are the hype in construction industry today. SKANSKA follows the trend within the industry making sure that it does not fall behind competition in certain

aspects. However, in many cases it imports ideas and trends from other SKANSKA markets around the world and implements them in Sweden. For instance, some parts of the USA like New York are ahead of Sweden in terms of green building. The knowledge obtained from these Net Zero constructions in for example New York are imported to the Swedish market as this has not yet been the standard in Sweden. Net zero buildings (NZB) are buildings that are energy self-sufficient and have zero carbon emission facilitated by energy efficient technology and energy production on site (Clean Energy Principles, 2012). Because SKANSKA is such a large company it can harness its best products and services from different markets, to implement it in others.

4.3 Exploration vs. Exploitation

So far, we have come to realize that the dilemma for managers and organizations is clear; short-term success requires exploitation while long-run success demands exploration. Therefore, the following aspects of the dilemma will be judged upon their characteristics and categorized among one of two: exploration or exploitation. The basis for this categorization has been extensively discussed in theoretical framework as well as in chapter 3.7.

4.3.1 Customer Satisfaction

Customer satisfaction is central factor to SKANSKA. In SKANSKA customers are divided into two different categories according to the transaction that takes place. The projects that are worth more than 100M SEK (big projects) are prioritized, while the second priority being the projects that are worth less than 100M SEK (small projects). For the big projects SKANSKA conducts questionnaires twice a year for customer feedback, whereas for the smaller projects questionnaires are conducted only once a year. The collected feedbacks are used to measure the customer satisfaction and any dissatisfaction or negative feedbacks. All thoughts that are identified during the survey will be addressed in future projects. But, Danielson stresses the point that not all the problems faced by customers can be addressed. Feedbacks are subjected to the circumstances in which they are obtained. For instance, people usually hesitate to provide genuine feedbacks face to face, yet the web gives them the opportunity to express without any hesitations. Thus, customer feedbacks are collected via the web.

4.3.2 Reduction of Direct Labor

In Sweden, SKANSKA employs about 10,000 people of which 6000 are blue-collar workers. SKANSKA also employs another 30-40,000 sub-contractors to reduce the direct labor costs. Sub-contractors are only hired when deemed necessary. SKANSKA mechanizes work to

reduce the direct labor; however the goal is to reduce the labor cost. This is done for instance, by employing eastern-European workers who are a source of cheaper labor, in comparison to hiring local Swedish labor. Danielson points out the importance of keeping labor costs down to be able to compete in the Swedish market.

4.3.3 Reduction of Used Material/Waste and Increase of Efficiency

Material waste was quite prevalent 10-15 years ago. However, recently companies were forced to reduce the waste in order to cut the cost and become more efficient, green, sustainable and competitive. Waste reduction is facilitated by better designs, drawings and planning of the project. For instance SKANSKA buys the right size of coving for their projects in order to reduce the waste, which was not always the case 10-15 years ago.

4.3.4 Optimization of 3rd Party Supplies

SKANSKA works with its suppliers to make use of, find and develop cheaper products. Pre-cast walls are one of many examples where SKANSKA has been able to work with its third party suppliers to reduce costs. This optimization serves a common goal of cost reduction among all the primary stakeholders however customers are the ones who benefit directly from it.

4.3.5 Green Building

For SKANSKA, their “green journey” began during the construction accident of the Hallandsås tunnel (south of Sweden) in 1992. During the first few years, the main aspect was decreasing the overall waste. Due to the constant improvement in technologies and increment in standards for green projects, becoming green has become a moving target. Earlier it was about waste reduction but recently it has moved away to include energy consumption needed to complete the whole project. It does not stop there; there is already a wave of Net Zero buildings in the market and in the future it could be that buildings should produce energy rather than just use less of it. SKANSKA has invested a lot of time and resources in its green journey. About 15% of total projects were categorized as green five years ago while that number has today increased to 50%.

4.3.6 Sustainability

“We aim to be an industry leader in sustainable business practices. To us, there is no other way forward” (SKANSKA, 2012). SKANSKA focuses on sustainability as a bigger goal brought about by green and efficient projects.

4.3.7 Expansion in New Markets

SKANSKA is a dominant company in the Swedish construction industry and has no plans to enter new markets within Sweden as they are already basically present everywhere. Currently SKANSKA will be focusing on its home markets, namely Scandinavia, UK, US, Poland and Bulgaria. Yet, it can be brought to our attention that SKANSKA also operates at a small scale in Canada, which it will further try to penetrate.

4.3.8 Increase in Number of Projects

Like almost all other construction companies SKANSKA experienced heavy losses and project delays caused by the financial meltdown in 2007 – 2008 but currently about 4000 projects are underway in Sweden. SKANSKA experienced a 61% increase in orders received while 8% increased in order backlog for 2011. SKANSKA aims to achieve further growth in the coming years and has already laid out a five-year plan for growth.

4.3.9 Improvement of Organizational Structure

Five years ago there was a significant structural change in SKANSKA, which led to the birth of the different support organizations that was discussed earlier. This changed the manner in which people worked within SKANSKA. For instance: a regional manager in Stockholm no longer had control of the HR department since it is now in its own separate subgroup.

4.4 Balance of Exploration and Exploitation in Project Based Organization

According to the questionnaire conducted by Danielson based on Blake and Mouton's (1968) managerial grid, we found out that SKANSKA falls within the optimal ambidexterity category called high performance context with a score of 5.33 for social support and 5.16 for performance management. The following graph was plotted to easily illustrate Skanska's the average score obtained from the questionnaire.

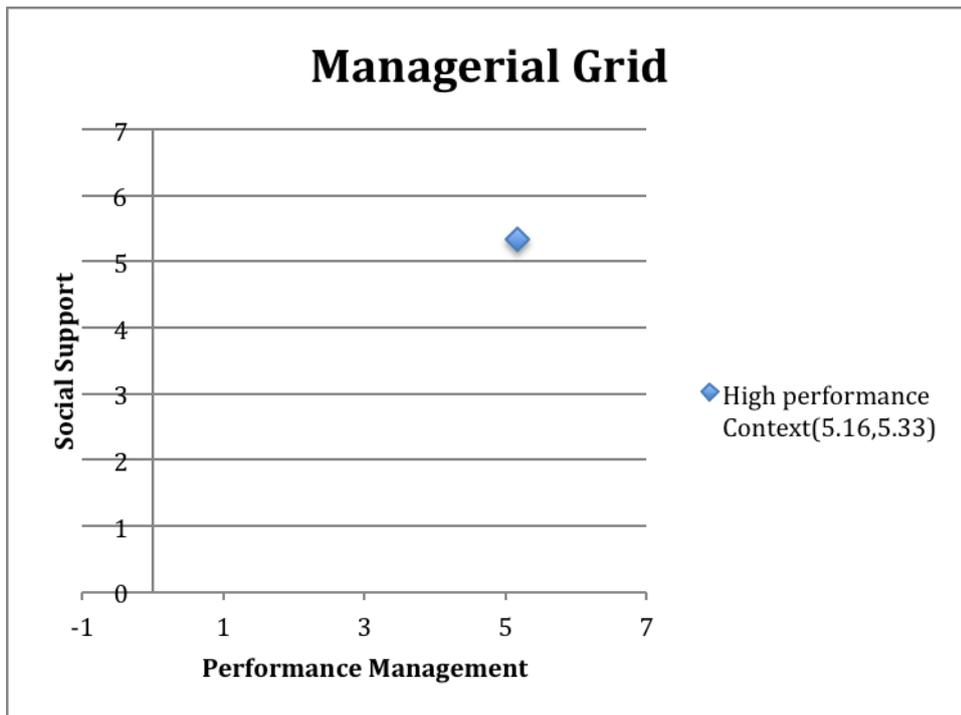


Fig 1: Managerial grid for Skanska

4.4.1 Design versus Execution

Designing and construction (execution) are both two major parts of the construction industry. Therefore, companies can choose to emphasize in one over the other. However SKANSKA aims to take as much responsibility as possible to capitalize its competence. Design and construction are both favored and the company chooses to do both whenever possible.

4.4.2 Team Building/Management

SKANSKA builds new teams for most of their new projects and this phenomenon is more emphasized for big projects. Prerequisites for teams depend on the nature of the project and the client to be served. Experience and competence are highly regarded.

4.4.3 Obstacles in Being Ambidextrous

Developing competent manpower and being customer oriented is very important for SKANSKA. By emphasizing on these two aspects SKANSKA will increase its competency and competitiveness in the market, hence increasing their profit.

4.4.4 Encouraging

The Hallandsås tunnel accident in the 1990's is one of the biggest failures in the history of SKANSKA. Additionally, SKANSKA recently tried to implement a new strategy in order to coordinate some specific aspects like the procurement within Nordic countries but failed. SKANSKA realized that even within the Nordic countries there were much cultural differences for a standard strategy. Ever since, SKANSKA has country level procurement.

4.4.5 Realized Importance of Ambidexterity by Managers

Danielson believes that ambidexterity in an organization is very important and scales it at seven in an ambidexterity scale of 1-10; one being least important and ten being extremely important.

4.5 Financial performance

The following table illustrates five-year growth rate of revenues for SKANSKA in Sweden starting 2007 until 2011. An average growth rate for five years was calculated in the end.

Year	2006	2007	2008	2009	2010	2011	Average growth rate
Revenue M SEK SKANSKA	24123	27389	30264	24600	23232	27014	
Growth	-	13.54%	10.50%	-18.72%	5.56%	16.28%	3.21%

Table 1: Financial performance of Skanska

5. NCC

NCC is one of the leading companies in the Nordic region for construction and property development (NCC, 2012). It operates in the following three businesses: construction and civil engineering, industrial and development. NCC has a share of 6% in the Nordic construction market that has generated 810 billion SEK for the year 2011. The company's operations are also spread in the Baltic region and Germany. The organization itself consists of several business units: NCC housing, NCC roads, NCC property development, and a separate construction unit for each Nordic country (Sweden, Norway, Denmark and Finland).

NCC's history dates back to 1890s when Axel Johnson, a Swedish businessman, established "Nordstjernen". In September 1989, its headquarters were placed in Solna, and shortly after that Nordstjernen was listed on the stock exchange.

All the data presented below were acquired through phone interview as well as email correspondence with Mr. Byfors.

5.1 Context of Ambidexterity

Byfors believes that one R&D department for the entire organization is not the optimal way to innovate. At NCC every department is free to improve and innovate, and tasks of exploring are incorporated within the responsibilities of every department. Hence there is no separate department for R&D.

5.2 Mode of Ambidexterity

NCC keeps close track of market trends and acts accordingly to strengthen their current position in the market. However with the flexibility of contextual ambidexterity within the organization they can explore new ideas and projects. NCC follows market trends and also explores the upcoming trends.

5.3 Exploration versus Exploitation

So far, we have come to realize that the dilemma for managers and organizations is clear; short-term success requires exploitation while long-run success demands exploration. Therefore, the following aspects of the dilemma will be judged upon their characteristics and categorized among one of two: exploration or exploitation. The basis for this categorization has been extensively

discussed in theoretical framework as well as in chapter 3.7.

5.3.1 Customer Satisfaction

Once every year NCC collects feedback directly from their private and public clients. A scale developed by NCC designed to measure customer satisfaction is used for the purpose. Also after the completion of each project, a questionnaire regarding the level of customer satisfaction is handed out to the client in order to acquire fresh feedbacks.

5.3.2 Reduction of Direct Labor

NCC strives to keep the labor costs low, however Byfors claims that it is not easy to achieve big increases in labor productivity. However, there has been a positive improvement in this sector throughout the recent years. Process automation is one way of keeping labor costs low but no further information was provided specific to this matter from NCC.

5.3.3 Reduction of used Material/Waste and Increase of Efficiency

Reduction of waste has seen significant improvements in the recent past. Reduction of material usage is an integral part of green projects that NCC undertakes. Hence, this aids NCC to become more efficient.

5.3.4 Optimization of 3rd Party Supplies

NCC deals with a lot of suppliers, therefore it is important to constantly keep track of the supplies and supply chain. There has been a great deal of changes in recent years in order to optimize this ever-improving process.

5.3.5 Green Building

NCC entered the market of green building about 10 years ago. Like for the rest of the construction industry in Sweden, being green and executing green projects is central to NCC's vision. Currently about 60-70% of total projects executed fall under the category of green projects. With the increase in the number of green projects the capital and manpower involved has also increased significantly and is expected to grow even further.

5.3.6 Sustainability

NCC has a separate department which handles projects related to sustainability. With a growing

market trend towards sustainability, NCC has experienced a increase in the volume of sustainable projects. The volume of capital invested and manpower involved in this segment has also increased in recent years.

5.3.7 Expansion in New Markets

Currently NCC has no plans for geographical expansion of its market. However, they are considering expanding in the housing market in Sweden, as well as at a business level in the civil engineering market in Finland.

5.3.8 Increase in Number of Projects

Although no numbers were cited by Byfors, an increase in the number of projects, as mentioned above, is planned for the Finnish civil engineering business and the housing business in Sweden. According to the annual report, NCC experienced growth in order backlog of about 14% while orders recieved increased by about 5% in 2011.

5.3.9 Improvement of Organizational Structure

In terms of restructuring within the organization, NCC has experienced minor but no radical changes in the recent past. NCC implements a lot of delegation to subordinates even on low levels of the company. The current delegation, which was implemented, implied high level of competence (technical and managerial).

5.4 Balance of Exploration and Exploitation in Project Based Organization

According to the questionnaire conducted among employees of NCC based on Blake and Mouton's (1968) managerial grid, we found out that NCC falls within the optimal ambidexterity category called high performance context with a score of 5.58 for social support and 5.16 for performance management. The following graph was plotted to easily illustrate the average score obtained from the questionnaires.

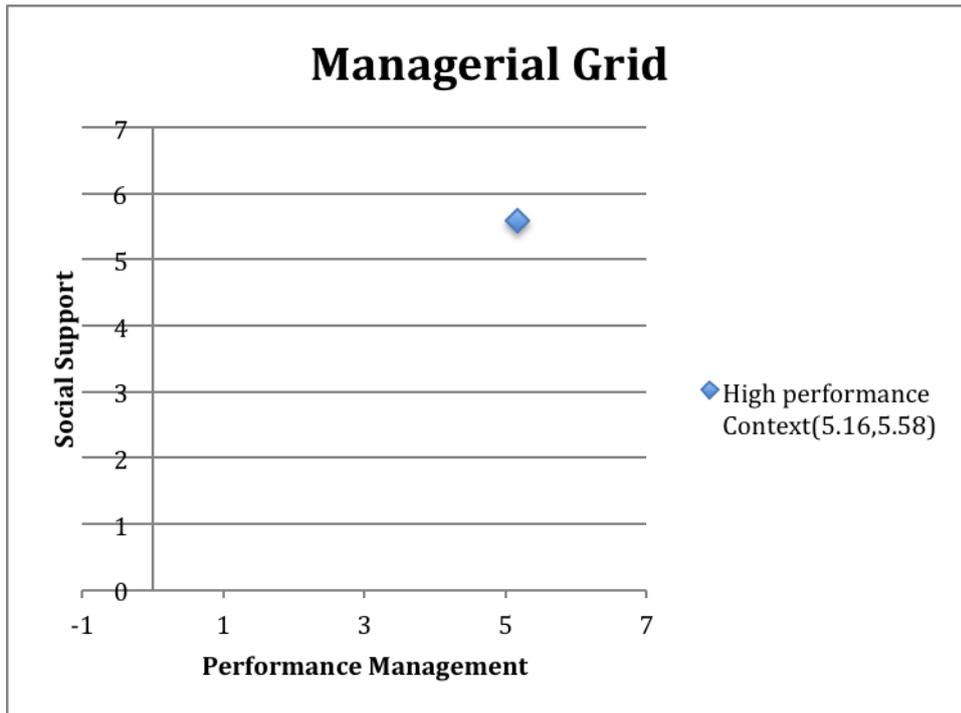


Fig 2: Managerial grid for NCC

5.4.1 Design versus Execution

NCC almost always is involved in both design and construction when they undertake a project. Nevertheless, in some cases it outsources the design process or hires consultants.

5.4.2 Team building/Management

The experience possessed by the team depends on the project that will be undertaken. Big and high stake projects require teams with highly experienced members who have prior working experience together, while relatively less experienced teams handle smaller projects.

5.4.3 Obstacles in Being Ambidextrous

According to Byfors, the most significant obstacle in becoming ambidextrous is culture within the organization. Good/excellent leadership, skilled staff, clear and well communicated strategy, good understanding of construction, measuring of KPIs (Key Performance Indicators) and continuous improvements helps achieve the balance in ambidexterity.

5.4.4 Encouraging

From 2002 until 2009 NCC invested heavily in the housing sector, which is categorized as a

failure for the company since the predicted returns were not met. A total of about 100 million Euros were invested in this sector. Byfors believes that this failure itself has not demoralized NCC and has yielded some valuable lessons.

5.4.5 Realized Importance of Ambidexterity by Managers

Byfors believes that it is very important to have a stable strategy for guidance and at the same time flexibility to adapt. In a scale of 1-10 in measuring importance of ambidexterity within an organization, Byfors gave a 7-8. He also highlighted the importance of good technical skills, good understanding of economics, management and organizational skills, risk management, knowledge in the construction area and leadership skills as competences they look for within a team. Achieving such a diversity within a team is a priority for NCC since this way people within the team can complement each other.

5.5 Financial performance

The following table illustrates year-to-year growth rate of revenues for NCC in Sweden starting 2007 until 2011. An average growth rate for five years was calculated in the end.

Year	2006	2007	2008	2009	2010	2011	Average growth rate
Revenue M SEK NCC	22098	24881	25508	22241	20962	23574	
Growth	-	12.59%	2.52%	-12.81%	-5.75%	12.46%	1.80%

Table 2: Financial performance of NCC

6. PEAB

PEAB is one of the leading construction and civil engineering companies in the Nordic region. The group serves the nationwide market of Sweden through its 130 offices, which is also the primary market. It also has businesses in the capital cities of Norway and Finland. Its headquarters are located in Förslöv in Skåne, Sweden. PEAB was founded back in 1959 with its sanitation and waste collection business. During the early 1970s it started its own construction department and merged with Hallströms and Nisse AB in 1991. PEAB became the official name for the group in 1993 (PEAB, 2012). “PEAB is a construction and civil engineering company whose guiding principle is total quality at all stages of the construction process. Through a combination of innovative thinking and solid professional skills, we aim to make our clients’ interests our own and thereby build at all times for the future” (PEAB, 2012).

All the data presented below were acquired through personal interview as well as email correspondence with Mr. Polland and Mrs. Åkerstedt.

6.1 Context of Ambidexterity

PEAB has certain special branches for business development that come up with new ideas, and if found feasible these ideas are implemented throughout the organization. For instance, real estate is one of the development departments that PEAB has. PEAB relies very much on its special development branches for exploration and this is the sector where largely majority of the innovative ideas originate. According to Polland, “Local ideas from local departments are implemented locally but great ideas spread naturally”.

6.2 Mode of Ambidexterity

PEAB closely follows the market trends and tries to explore upcoming trends before their competition does. PEAB is open to follow other's ideas or original ideas as long as it seems feasible and profitable.

6.3 Exploration versus Exploitation

So far, we have come to realize that the dilemma for managers and organizations is clear; short-term success requires exploitation while long-run success demands exploration. Therefore, the following aspects of the dilemma will be judged upon their characteristics and categorized among one of two: exploration or exploitation. The basis for this categorization has been extensively

discussed in theoretical framework as well as in chapter 3.7.

6.3.1 Customer Satisfaction

PEAB has always worked with its customers in order to improve their level of satisfaction regarding completed projects. Customer feedbacks are collected through questionnaires. This helps PEAB to keep track on whether customers are pleased or not. It adds value to its customer service through a branch within PEAB which functions similarly to an insurance department. In case of complaints clients can reach this department and get a contact person who will handle the case and try to address the problem.

6.3.2 Reduction of Direct Labor

PEAB buys a lot of the products from third party suppliers, which decreases its direct labour costs. Earlier PEAB was involved in many branches but it has moved away from that business model to accommodate third party suppliers and this trend has been increasing in the recent past. This, among with various other strategies have enabled PEAB to obtain higher labour productivity and minimize direct labour costs.

6.3.3 Reduction of Used Material/Waste and Increase of Efficiency

PEAB has been able to reduce significant amounts of waste in its projects. For instance, in the past coving was bought and adjusted to required length which produced waste but now they are bought at appropriated length and volume to minimize the waste. The result of this has been increasing efficiency and far less use of materials than in the past.

6.3.4 Optimization of 3rd Party Supplies

PEAB works closely with its supplier "every hour and every day", as Polland said, this enables PEAB to decrease the overall cost of supplies. Close working relationship with its suppliers helps PEAB to get the right order. At the same time reusing waste materials contributes to lowering costs. Logistics are handled by production manager and purchasing manager.

6.3.5 Green Building

PEAB has been in the green market for about five years now, which has been a period of significant growth. All of PEAB's projects are green, but not all projects that are outsourced to them are green. The share of green projects among the total projects within the company has

seen a tremendous raise in numbers recently.

6.3.6 Sustainability

Sustainability is an active part of PEAB's business plan and it has not always been that way. Green and sustainability thinking is present in all of PEAB. "PEAB's vision is to be the sustainable community builder" (PEAB, 2012).

6.3.7 Expansion in New Markets

PEAB is a mature company in the Swedish market and is basically present in all of the Swedish market. Since it is present all over Sweden, it has no intentions as of yet to expand further in a geographical manner. PEAB wants to strengthen its existing business and according to Polland, there is no recent plan to enter other business areas in the recent future.

6.3.8 Increase in Number of Projects

PEAB has also experienced an increase in the number of projects recently. They had 5% increase in order backlog and 9% increment in orders received in 2011. However, Polland stated that the construction industry has been descending, since many projects are delayed with due to the recession.

6.3.9 Improvement of organizational structure

PEAB as a group has many subsidiaries that are involved in several specialized business areas. The organizational structure and relationships are rather complex as it is expected from a giant organization. Different supporting departments support the main organization. For instance, PEAB's business development section works in exploring while the rest of the organization is a part of the main organization. Hence, there has been no need for restructuring the organization, since its present state shows satisfactory results.

6.4 Balance of Exploration and Exploitation in a Project Based Organization

According to the questionnaire conducted among the employees of PEAB, based on Blake and Mouton's (1968) managerial grid, we found out that PEAB falls within the optimal ambidexterity category called high performance context with a score of 4.86 for social support and 4.65 for performance management. The following graph was plotted to easily illustrate the average score

obtained from the questionnaires.

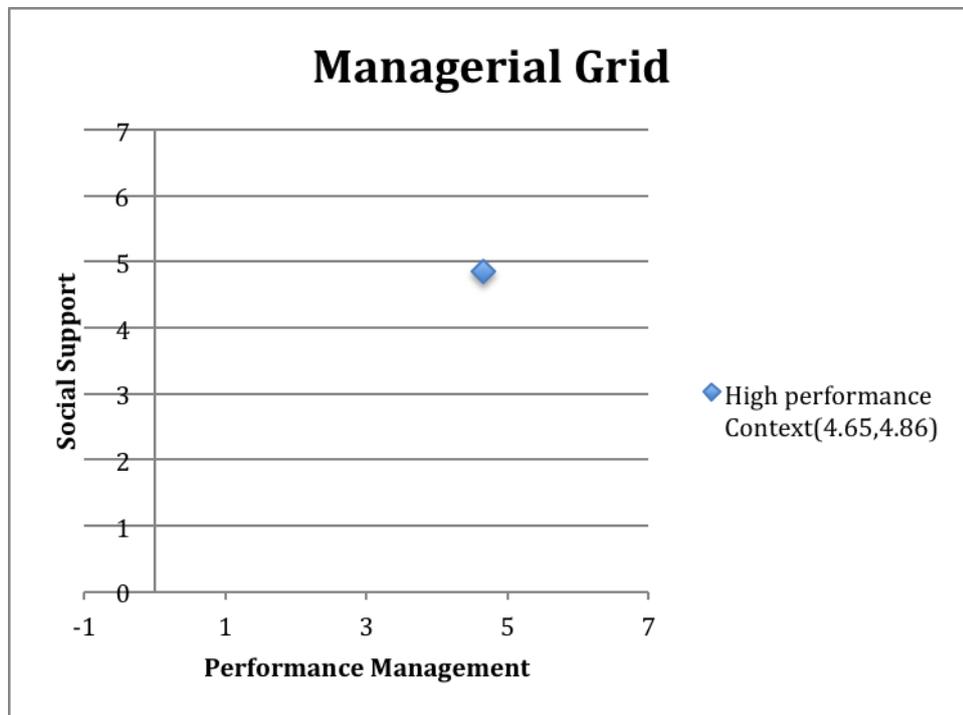


Fig 3: Managerial grid for PEAB

6.4.1 Design vs. Execution

Design implies the planning of a project, while execution means the actual execution of that design. PEAB is involved in both design and execution but most of the times it is only construction work that is undertaken. PEAB is mainly a construction company, therefore design stays in the background according to Polland.

6.4.2 Team building/Management

PEAB as a construction company is project based. Project based companies rely on their teams for the success of their projects. Hence, knowledge, leadership skills and experience are the most important features that are sought for within a project team. Enthusiasm is an extra quality, which is taken into consideration, as Åkerstedt states.

6.4.3 Obstacles in Being Ambidextrous

A major obstacle in achieving ambidexterity is “to find the right people to work with, at the right

time”. Polland believes that it is not enough for a manager to be ambitious; the co-workers should also be co-operative and understanding enough to vision what a manager envisions.

6.4.4 Encouraging

PEAB has not experienced any major failures recently. However, if there had been any downturns, Polland believes that it is because of the unbearable stress among project team members, which is usually caused by the large load of project, not by the decisions made.

6.4.5 Realized Importance of Ambidexterity by Managers

Both Åkerstedt and Polland believe that ambidexterity is extremely important for success in the long run. Polland says that it is his job to make sure that this culture of ambidexterity does not cease to exist within the organization. On an ambidexterity scale of 1-10, Polland gave an 8-9.

6.5 Financial performance

The following table illustrates the year-to-year growth rates of revenues for PEAB in Sweden, starting 2007 until 2011. An average five-year growth rate is also provided.

Year	2006	2007	2008	2009	2010	2011	Average growth rate
Revenue M SEK PEAB	24234	27983	29940	23869.85 4	25224.6	27867.72	
Growth	-	15.47%	6.99%	-20.27%	5.68%	10.48%	3.67%

Table 3: Financial performance of PEAB

7 Analysis of Empirical Data

This chapter analyzes the empirical findings about SKANSKA, PEAB & NCC, based upon the theories presented in the theoretical framework.

7.1 Context of Ambidexterity

Research and Development/Business Development is a dedicated branch of a company, which specializes in the inception of new ideas and knowledge. Companies invest resources and time in this sort of activities in order to stay ahead of the market and come up with revolutionary products and ideas, ensuring their competitiveness in the future. Companies have different approaches in addressing this situation: structural ambidexterity and contextual ambidexterity.

We realized that all of the companies we investigated are involved in exploitative activities, performing routine tasks like any other project-based companies (Eriksson, 2009). From the study we discovered that there is no equal emphasis on exploitation and exploration activities, however, these companies have taken advantage of opportunities and as a result the construction industry today is very different from what it was a decade ago. Green building and sustainable thinking are two of the most explored activities. Although most of the performed activities are exploitative, SKANSKA and PEAB have specialized business development branches, which focus on exploring opportunities mirroring structural ambidexterity. Here, the tasks of exploration and exploitation are separated from each other. Business development departments are responsible for exploration while the rest of the organization performs exploitative tasks. Eventually, exploration and exploitation are balanced and bridged at a managerial level.

On the contrary, NCC lacks such specialized department. At NCC innovations are brought about from within the company instead of being conducted in specialized departments, hence contextual ambidexterity is present. Employees here are free to undertake explorative or exploitative tasks and bridging of these two types of activities are not necessary as they are performed at organizational unit level. Even though exploitative activities are more common than explorative, these companies are pursuing different strategies to become ambidextrous: SKANSKA and PEAB require ambidextrous thinking at managerial level, while NCC at organizational unit level.

7.2 Mode of Ambidextrous Organizations

O'Reilly and Tushman (2004) prove that many companies, which have changed their

structures to ambidextrous organizations have improved their performance. SKANSKA, NCC and PEAB all claim of being ambidextrous and have invested heavily to reach this state. All of these companies are improving their products and services continuously while at the same time having managed to accommodate and further facilitate exploration. SKANSKA and PEAB have created separated departments for innovation like business development or R&D. By doing so these companies have reinforced their strategy and importance of being simultaneously innovative while improving their processes. Being innovative has become a necessity that cannot be ignored. Companies establish a different structure to fulfil this necessity and promote ambidexterity.

The downside of structural ambidexterity, however, is that it is not always easy to connect exploration with exploitation activities on a strategic level. On the other hand, NCC promotes ambidexterity in organizational unit level, which is a typical example of contextual ambidexterity. To overcome the lags that occur in structural ambidexterity when bridging the innovation to improvements at strategic level in an organization, contextual ambidexterity is very helpful as both improvements and innovations are performed simultaneously in the same unit. Since each individual in an organization is responsible for exploration and exploitation, it could be tough to develop a culture, where employees feel responsible enough to explore and not just exploit. Regardless of their context of ambidexterity all of these companies have managed to reach a balance. Moreover, their financial performance and their sheer market share indicates that being ambidextrous has proved successful as they lead the Swedish construction industry.

7.3 Exploration versus Exploitation

Different activities and tasks performed by SKANSKA, NCC and PEAB will be scrutinized, analyzed and categorized as explorative or exploitative. The theoretical frame of references will provide the basis upon which the acquired empirical data from the study of those three companies will be judged.

Exploration, according to March (1991), Soosay and Hyland (2008), refers to innovative changes, discovering new possibilities, new knowledge and technologies. However, exploitation is a set of activities performed by a company with existing knowledge and resources in order to improve its efficiency and hence profitability. Based on these definitions SKANSKA, NCC and PEAB will be assessed in the following lines. In the up coming analysis we will categorize each aspect into either explorative or exploitative. Explorative will be those aspects, which are revolutionary, meaning they are either unique or that the pursuing of such strategies will completely change the

way business is conducted in the near future. Exploitative will be the activities, which are similar among all the companies. Some activities, which are common among all the companies but are designed to change the culture of business, will be considered explorative. So far we have discovered that imbalanced focus on either of the two could prove destructive. Hence, we will utilize the following analysis to see the relative importance of exploration and exploitation in these organizations and map the balance between the two different activities.

The following explorative and exploitative aspects to determine ambidexterity of an organization were adapted to our study from the design of the dissertation 'Multiple Levels of Ambidexterity in Managing the Innovation' by Aravind Chandrasekaran (2009).

7.3.1 Customer Satisfaction

Customer satisfaction is one of the priorities when it comes to dealing with the ever increasing competition in the market. Customer feedbacks help companies improve their products and services in the long run, as they provide insights of the perceived value created by an organization for its customers. Even though changes in customer satisfaction might take longer to occur, questionnaires are used as tools to deal with current problems and promote competitiveness in the short-run.

SKANSKA conducts customer questionnaires twice a year for their big clients and once a year for the smaller ones. They are interested in investing in relationship building with its bigger clients more than what they would invest for smaller. However this does not mean that the latter are ignored. NCC conducts customer questionnaires annually, as well as after the end of each project. They collect feedback from customers after each completed project as well. PEAB conducts questionnaires to measure customer satisfaction once every year for all of their clients. However, PEAB does not stop here in ensuring that its customers derive ultimate satisfaction from its services. PEAB has a special branch for customers where they can report their complaints. If any complaints are present, a case for the respective customer is opened and a manager taking care of the issues is assigned. This whole process is evolutionary, since nothing radical happens that can bring about drastic changes. Customer questionnaires are means of improvement; hence they are categorized as exploitation.

7.3.2 Reduction of Direct Labor

Labor costs comprise a significant proportion of project expenses in the construction industry, therefore companies always try to keep them low using various alternatives. Process automation

is one of the basics in improving labor productivity. However, there has been a trend in hiring workers from Eastern European countries who demand lower wages. According to Danielson, this relatively new phenomenon, just like process automation, has become more like an industry standard.

Another practice for keeping the cost of direct labor low is the use of sub-contractors. SKANSKA and NCC have experienced improvements in their labor productivity but their labor structure has not seen any drastic changes. The ultimate goal of process automation and reduction of direct labor is to reduce the labor costs. Hence, hiring cheap labor to keep the costs low helps companies be more competitive in the market in terms of prices. SKANSKA and NCC have been exploiting their existing labor structure and have not introduced any radical ideas. PEAB on the other hand, used to produce a lot of what was used in their projects but it relies almost entirely on its suppliers now. This change was undertaken for reducing the costs and risks associated with the direct labor in the phase of the ongoing economic crisis. In the time when PEAB's competitors SKANSKA and NCC are rooted on to their existing labor structure, PEAB has restructured theirs significantly by outsourcing many activities especially in the production sector. Hence, we can claim that PEAB with its revolutionary move is rather explorative, whereas NCC and SKANSKA have undertaken exploitative actions in terms of reduction of labor costs.

7.3.3 Reduction of used material/waste and Increase of Efficiency

Reduction of waste contributes to the increase in efficiency of any project. According to March (1991) it is a characteristic of exploitation. Recently companies were forced to reduce their waste in order to cut costs and become more efficient, green, sustainable and competitive (Mckinsey, 2012). SKANSKA has been able to decrease the waste significantly compared to a decade ago. Waste reduction for them started as a part of the green journey after the Hallandsås accident. The company works on improving its efficiency which in part is assisted by its waste reduction efforts. NCC undertakes waste reduction as a tool to improve green projects and has been successful in doing so. PEAB works with its suppliers to reduce the waste by implementing right orders and reuse of the materials. For instance, SKANSKA and PEAB order right size and volume of coving and moulding instead of buying bulk, part of which might be wasted. Waste reduction improves efficiency which in turn helps companies become green, which is a major part of their business strategy. Being greener gives them an edge in their business while the efficiency brought about helps them stay competitive in the short-run. Therefore all three companies are exploitative from this perspective as none of them has performed any activity that can be called radical (and does not change much in the way business is done on a daily basis) in

this aspect of ambidexterity.

7.3.4 Optimization of 3rd Party Supplies

Optimal inventory minimizes the operating costs for the company and it is the desired outcome of the supply chain optimization process. This whole motion is concerned with improvements by exploiting existing knowledge. SKANSKA, NCC and PEAB, work actively and closely with their third party suppliers to reach the optimal functioning of their supply chain. Note the fact that none of the companies provided detailed specifics about the procedure of optimizing supply chain, partly because we wanted to focus on the overall optimization strategy rather than diving into the specifics, which can be a whole other subject of study. It is very important for all of these companies to work on optimizing their supplies and supply chains because of their heavy reliance on third parties for materials as well as labor. Therefore, close working relationships with their subcontractors, who supply labor and materials help these companies improve in terms of efficiency and cost cutting. The ultimate goal here for all the companies is to increase their competitiveness in the short-run. The available information concerning this aspect shows that even though there might be different approaches, there is nothing radical, hence all of these three companies are relatively on the same level of exploitation.

7.3.5 Green Building

Green building and the concept of sustainable development have been around for a while now (Mao, Lu, & Li, 2009), but only recently, companies started investing significant amount of time and resources aiming to become entirely green. SKANSKA has been involved in green building for more than two decades. They initially emphasized mainly on waste reduction, but lately they have introduced also reduced energy consumption. Approximately 50% of their projects today are green. NCC entered the green market about a decade ago and roughly 70% of their projects today are green. PEAB started their green journey about five years ago and has significantly invested ever since. All the projects that PEAB is in charge of today are green, however this is not the case for all projects outsourced to them.

All of these companies have green building as an active part of their business strategy and the current trends suggest that they are likely to invest further in this direction. This is one of the sectors in the construction industry that has been constantly explored in the recent past and has gained a lot of attention. Although the concept has been around for a while, the reason that green building is considered explorative is because of the momentum it has gained. The majority of

projects undertaken by all of these companies today fall under the category of green building which was not the case about five years ago. This trend of increasing green projects will change the way business is done in the future along with the progress in technology and demands. Having in mind the current trend, we can assume that all the projects of these three companies will be green in the recent future. It is important to note that the criteria for green building keep changing over time, for instance, Net Zero Buildings are already prevalent in some markets. Even though all of the companies investigated have been exploring these opportunities for a long time, judging from the proportion of green projects among the total number of project tells us that PEAB has been most explorative followed by NCC and SKANSKA.

7.3.6 Sustainability

Sustainable design aims to "eliminate negative environmental impact completely through skillful, sensitive design" (McLennan, 2004). Similar to "Green Building" sustainable construction is another hyped aspect of the contemporary construction industry. SKANSKA aims to execute sustainable projects with the combination of green and efficient projects. NCC goes one step further in sustainable building by establishing a separate department, which handles sustainable projects. At PEAB, sustainable thinking is an active part of their business plan and is present in all departments. Sustainability is an ideal state in the construction industry assisted by waste reduction and green buildings. The idea of sustainability changes with the improvements in technology; therefore companies are forced to explore different techniques to become more sustainable over time. Even though the idea of sustainable building might impact the current competitiveness, it is a long-run investment, as sustainability cannot be achieved overnight. Since its focus is on long-term competitiveness, sustainable building is an explorative activity. Hence, all three of these companies are explorative in this aspect.

7.3.7 Expansion in New Markets

Expansion into new markets, geographically or businesswise, is a way companies explore opportunities. SKANSKA has been dominant in the Swedish market. With over 100 branches it is present all over Sweden and plans to stay so for now with no further expansion planned for the near future. Due to the fact that there will be no exploration, exploitation is the only way to keep the company competitive. This creates an imbalance in ambidexterity from this aspect. NCC as well, has no plans yet for geographical expansion, however, they are trying to improve their housing in Sweden and their civil engineering business in Finland. These are already existing branches for NCC, which means that regarding expansions, they are putting an emphasis on

exploitation. PEAB is present in most of the Swedish construction market and has no recent plans to expand further. Like SKANSKA and NCC, PEAB has no explorative activity in this regard as it has no intention of innovating but focusing on its existing markets.

7.3.8 Increase in Number of Projects

For prospering companies, such as Skanska, NCC and PEAB, revenues are usually expected to increase over time along with the number of projects. The order backlog gives us a narrow window to estimate its future stand and current competitiveness that led the growth. Increasing the number of projects could mean that the company is handling innovations better (everyone is improving so, we ignore it) than its competitors or, the knowledge base resulted from the increasing number of projects help the company to be more innovative than its competitor. In any case the increasing number of projects is possibly because of the improvements, however we believe that extraordinary growth can only result because of innovations. In terms of number of projects, SKANSKA experienced a 61% increase in order received while 8% increased in order backlog for 2011. NCC experienced growth in order backlog of about 14% while orders received increased by about 5% in 2011. PEAB on the other hand had 5% increase in order backlog and 9% increment in orders received in 2011. Hence, from the growth figures, we claim that SKANSKA is more explorative in this aspect than NCC and PEAB.

7.3.9 Improvement of Organizational Structure

Organizational structures in the different companies aim at achieving various goals through task differentiation, co-ordination and supervision. The very structure can be arranged to emphasize either exploitations or explorations. Approximately five years ago, there were large changes implemented in the organizational design of SKANSKA that shaped their structure in its present form. It consists of line organization sustained by support departments. This restructuring at SKANSKA promoted exploration with the establishment of special departments for the purpose. At the same time, the main organization keeps exploiting the existing knowledge and thus balance is achieved with the means of structural division. We can also claim that this restructuring move in Skanska was encouraged due to the necessity for exploration.

However, NCC and PEAB went through some minor changes which were evolutionary rather than revolutionary. The fact that these two companies did not go through any radical structural change could be because there is no need for further exploration in order to stay competitive. The organizational restructuring can help a company become competitive in the long run

and the pursue of long-run goals is exploration. Hence, it is clear that SKANSKA is explorative while NCC and PEAB are exploitative in this aspect.

We analyzed nine different aspects of organizations within the scope of exploration and exploitation. The other criteria for exploration and exploitation is the radicalness of the activity; if an activity is radical among the companies it is considered explorative, if not exploitative. The following table provides summarized analysis of all the activities discussed above into two categories: exploration and exploitation, and provides the ratio of explorative activities to exploitative activities for each companies. This will give us an overview of the prevalence of exploitative and explorative activities among the three companies and it will further clarify the balance of ambidexterity present in each company.

Research site	Project name	Type of Activity	Exploration: Exploitation
SKANSKA	Green Building	Exploration	1:2
	Sustainability	Exploration	
	Expansion in new markets	Exploitation	
	Increase in number of projects	Exploration	
	Customer satisfaction	Exploitation	
	Reduction of direct labor	Exploitation	
	Reduction of used material/waste and increase of efficiency	Exploitation	
	Optimization of 3 rd party supplies	Exploitation	
	Improvement of organizational structure	Exploration	
NCC	Green Building	Exploration	2:7
	Sustainability	Exploration	
	Expansion in new markets	Exploitation	
	Increase in number of projects	Exploitation	
	Customer satisfaction	Exploitation	

	Reduction of direct labor	Exploitation	
	Reduction of used material/waste and increase of efficiency	Exploitation	
	Optimization of 3 rd party supplies	Exploitation	
	Improvement of organizational structure	Exploitation	
PEAB	Green Building	Exploration	1:2
	Sustainability	Exploration	
	Expansion in new markets	Exploitation	
	Increase in number of projects	Exploitation	
	Customer satisfaction	Exploitation	
	Reduction of direct labor	Exploration	
	Reduction of used material/waste and increase of efficiency	Exploitation	
	Optimization of 3 rd party supplies	Exploitation	
	Improvement of organizational structure	Exploitation	

Table 4: Illustration of ratios (Exploration : Exploitation) for all three companies

7.4 Balance of Exploration and Exploitation in Project Based Organizations

According to Blake and Mouton's managerial grid (1968) full potential of subordinates, thus ambidexterity, can be reached in the optimal high-performance context, which can be described by high levels of both social support and performance orientation.

The result of the survey undertaken provides the basis for this graph. However, it is very subjective, since it involves opinions of people with different positions within the organizations. Plotting the graph from the questionnaires clearly showed that all three companies SKANSKA, NCC and PEAB have achieved full potential, thus ambidexterity but the degree of this achievement within this context varies. According to this grid, an ambidextrous company lies in the upper right corner of the graph and the further away it lies from the X and Y axis the

more ambidextrous the company is. NCC seems to be the highest achiever lying on the farthest upper right corner of the graph. SKANSKA closely follows NCC while PEAB is closer to the average position in the managerial grid than the rest. In other words, NCC has the highest level of ambidexterity followed by SKANSKA and PEAB.

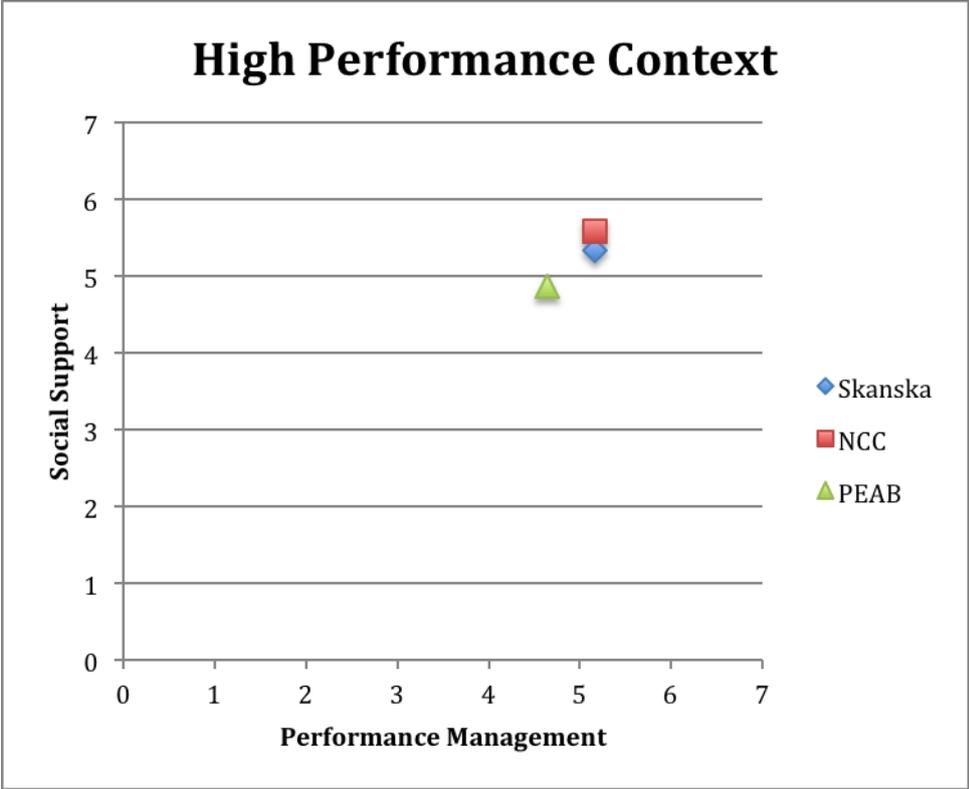


Fig 4: Managerial grid for all three companies

The structural division of project portfolio into exploitation focused and exploration focused is common among project based organizations and exploration is rather low at the strategic business unit and project portfolio levels. Construction companies do not fully benefit from the innovations due to the lack of integration between internal knowledge transfer and cross-project learning, hence, ambidexterity management at project level should also be examined.

7.4.1 Design versus Execution

SKANSKA’s preference for design-build projects gives them the opportunity to explore in the first part of the project. However, they also carry out design-bid-build projects. As mentioned

above these two types of projects hinder ambidexterity as exploitation is emphasized in both. SKANSKA can be explorative in their design-build projects if they choose to do so and eventually balance out their exploitative and explorative activities to be ambidextrous.

The projects executed by NCC are design-build rather than design-bid-build, although they sometimes outsource designing task or hire consultants to assist them. Design-build projects limits the exploring capabilities of a company since they tend to design projects based on prior knowledge. However, as mentioned earlier both types of projects harm ambidexterity within an organization in their own way. Nevertheless, we believe that NCC's preference for design-build contracts over design-bid-build contracts gives them the opportunity to be explorative in nature if they choose to. The choice made by the company to make all of its construction environmentally friendly starting autumn 2011 supports the fact that they are putting an emphasis on exploration.

PEAB on the other hand prioritizes construction over design and it is construction work that is undertaken most of the times. The preference of design-bid-build contracts over design-build contracts suggests that PEAB is more exploitative in nature since designing is the part of the project where most of the exploration in construction industry takes place.

7.4.2 Team building/Management

Implementation of ambidexterity on project level, as stated necessary by Eriksson (2012), is influenced by the nature of teams (O'Reilly and Tushman, 2008). Diversity within a team promotes exploration while homogeneous teams are exploitative in nature (Andriopoulos and Lewis, 2010; Beckman, 2006).

SKANSKA builds new teams for most of its projects, especially in the case of bigger projects. The nature of projects and clients determines the demands for a team. Experience and competence are most commonly sought for when forming a team. According to the learning myopia argument (March, 2003; Gupta et al., 2006; Holmqvist, 2004) experienced teams are more likely to exploit than to explore because of the inherent risk of failure associated with exploring. However, formation of new teams for new projects enables SKANSKA to form explorative team, as they are less likely to suffer from the competency trap described in the learning myopia argument. Hence, SKANSKA can balance out their exploitative and explorative actions within teams in order to enhance ambidexterity.

Likewise, at NCC experienced teams carry out bigger projects while relatively less experienced teams are involved in smaller projects. According to the learning myopia argument teams are blinded to opportunities and get caught in certain capabilities gained from prior experience (March, 2003; Gupta et al., 2006; Holmqvist, 2004). Therefore this sort of highly experienced teams are likely to fall in the competency trap. However, good technical skills, knowledge of economics, management and organizational skills, risk management, knowledge in the construction area and leadership skills are sought in order to form a diverse team and break the constraints of the trap.

Regardless of project size, knowledge, leadership skills and relative experience are what PEAB looks for when forming a team. Enthusiasm is another quality that is sought among team members. Similar to NCC, relative experience helps team members to be exploitative and diversity brought by team members with different knowledge, leadership skills and enthusiasm promotes the explorative nature of the team and hence balance between two different actions is achieved for the sake of ambidexterity.

7.4.3 Obstacles in being ambidextrous

In addition to the aforementioned constraints in the theoretical framework that hold back organizations from balancing out exploration and exploitation, there are others, which are realized at managerial level. At SKANSKA, developing competent manpower and being customer oriented is very important in order to increase competitiveness, hence enhance profits. This quest of maximizing shareholder value encourages companies to exploit in the short-term and discourage exploration, hence making it difficult to reach a balance.

On the other hand, organizational culture is viewed as a big obstacle at NCC in becoming ambidextrous. As we already mentioned project-based companies are exploitative in nature (Eriksson, 2012). Hence, culture as an obstacle for ambidexterity implies that exploitation is encouraged at the expense of exploration, which makes it difficult to achieve the desired balance. Lack of vision among lower level employees is seen as a potential obstacle in becoming ambidextrous at PEAB. Managers must be able to communicate what they envision to all levels of the organization. Otherwise it would be difficult to deal simultaneously with innovations and on-going demands.

Exploration has inherent risk of failure; therefore how failures are treated within an organization mirrors their attitude towards exploration. Since the construction industry is naturally

exploitative, it means that the way failures are absorbed reflects their commitment towards ambidexterity.

At regional level SKANSKA tried to implement a standard procurement strategy for the Nordic region and the result was a failure. This encouraged SKANSKA to re-implement a country level procurement strategy. According to SKANSKA this failure was a result of the cultural differences within the Nordic countries and it is considered a valuable lesson in conducting such activities. NCC invested about a hundred million euros from 2002-2009 in the housing sector but failed to obtain predicted returns. However, people at NCC are not discouraged by the fact, but rather positive, since they look at it as a valuable lesson. PEAB in contrast has not experienced any major failures in the recent past. This implies that their present distribution of efforts between explorative and exploitative activities has proven successful for them.

7.4.4 Realized importance of ambidexterity by managers

In an importance of ambidexterity scale of 1-10 where 1 being least important and 10 being extremely important, Danielson at SKANSKA gave a 7, Byfors at NCC 7-8 and Polland at PEAB 8-9. This means that being ambidextrous is very important for PEAB while least important for SKANSKA among three companies investigated. It is important to take into consideration that this answer is very subjective, nevertheless, it highlights the fact that ambidexterity is vital for all these companies. Regardless of the obstacles and their priority for ambidexterity, it is important to note that all of these organizations are committed in terms of their structure, resource and vision in balancing exploration and exploitation.

7.5 Financial performances

Despite the major financial crisis of 2007, which hit the Swedish construction industry, SKANSKA, NCC and PEAB have managed to maintain a positive growth in the five-year period starting 2007 until 2011. These positive values during a period of environmental uncertainties indicate the favorable influence of the current balance between exploration and exploitation within the three companies. The average growth rate in five years for SKANSKA was 3.21 %, 1.8 % for NCC and 3.67 % for PEAB. Among these three Swedish companies in 2011, SKANSKA had the highest growth of about 16 % followed by 12 % of NCC and 10 % of PEAB. PEAB had the highest average growth rate in five years while lowest in annual growth rate of 2011.

8 Report of the Results

This chapter presents the results obtained from thorough analysis of our empirical findings using the theoretical framework. It summarizes all the results of the analysis chapter.

SKANSKA and PEAB have structural ambidexterity with dedicated departments for exploration activities while NCC has contextual ambidexterity with exploration and exploitation activities performed at organizational unit level. Judging from the structure and innovation perspective all of these three companies are ambidextrous in nature. While some are exploring one sort of opportunities and others are exploiting others, the ratio of exploration versus exploitation activities in all of these companies is almost the same. We, further, found that NCC has the highest level of ambidexterity followed by SKANSKA and PEAB. SKANSKA and NCC prefer design-build contract instead of design-bid-build, which gives them the opportunity to explore in the initial part of the process. On the other hand, PEAB prefers design-bid-build contracts, which are exploitative in nature. All of these companies consider different pre-requisites in building teams with experience being the common denominator among all three. The exploitative nature of experienced teams is balanced out with various other explorative aspects in all three companies. Short-term goals like shareholder maximization at SKANSKA, culture at NCC and lack of vision among lower level employees at PEAB are the obstacles that can hamper the aim to be ambidextrous. All of these three companies approach failure as a valuable tool to avoid in learning. According to the interview, realized importance of ambidexterity was highest in PEAB followed by NCC and SKANSKA. All of the three companies experienced positive average growth for the last five years.

9 Conclusion

This chapter presents our findings by addressing the purpose as well as the research questions with the research findings followed by suggestions

In this study we found that SKANSKA, NCC and PEAB, three of the most successful construction companies in Sweden, are highly ambidextrous. The questionnaire conducted reinforced the validity of our findings as these three companies mirror the high performance context in Blake and Mouton's managerial grid (1968). We took into consideration the large fluctuations in relevant growth of revenues caused by the financial meltdown, when measuring the successfulness of the construction industry between 2007 and 2011 in Sweden. All three companies experienced average positive growth in those five years despite the negative growths during the meltdown. Furthermore, as of June 2011 SKANSKA, NCC and PEAB were also ranked as the three biggest construction companies of not just Sweden but also the whole Nordic region with regards to performance (Appendix D). In addition, SKANSKA, NCC and PEAB are three ambidextrous companies with healthy growth rates and therefore, we can conclude that the impact that ambidexterity has on the successfulness of an organization within the Swedish construction industry is significant.

During the investigation we carefully selected nine different aspects indicating the nature of activities undertaken by companies. We found that they have varying degrees of exploration and exploitation in each of these aspects. However, the ratio of exploitative activities to explorative activities turned out to be almost equal for all of these companies. Therefore, exploitation and exploration, which are the two main factors of ambidexterity, do not have the same importance in organizations within the Swedish construction industry.

The emphasis on exploitation makes all of these three companies' defenders rather than prospectors (Auh and Menguc, 2005) nonetheless they are ambidextrous. Realizing the importance to exploit and explore at the same time (O'Reilly & Tushman, 2004), companies set out their visions to achieve ambidexterity. Client constraints, and high cost associated with exploring are some of the obstacles suggested by earlier studies. In our study, however, we found that short-term goals such as shareholder maximization, organizational culture that promotes either exploitation or exploration and lack of ambidextrous vision among lower level employees are some of the major obstacles in achieving ambidexterity.

9.1 Discussion and further studies

The present study yielded a satisfactory answer to our purpose and research questions. However, due to the limited number of empirical data and lack of representativeness of our study results we recommend any future research within this field should have a larger number of participants together with a wider range of different construction companies in order to reach a predominant conclusion rather than a suggestive one.

10 References

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Appendix A - Letter Sent to Companies

SKANSKA/PEAB/NCC

Headquarters address

Dear Sir/Madame,

We are a group of undergraduate students at Jönköping International Business School, majoring in 'International Management'. As a part of our final year studies, we are writing a thesis within the scope of Organization Design. Our thesis supervisor Börje Boers suggested us that we contact you to conduct an informational interview.

Our purpose is to find out "*the extent of impact that ambidexterity* has on the successfulness of an organization within Swedish construction industry*". With the successful accomplishment of this study, we aim to provide deep and clear empirical insights on the importance of ambidexterity for your company and opportunities to enhance our understanding within organizational design.

In order to accomplish our goal we need to study different organizations and interview the key persons within those companies. From more than 3200 construction companies in Sweden we have chosen the three leading companies: PEAB, SKANSKA and NCC, after careful consideration.

At your convenience, I would like to schedule a 30–35 minutes informational interview with you. The purpose of the meeting is to gather additional information that will better assist our study. I will contact you by telephone on October 23rd to see if we can schedule a meeting. Thank you for considering my request.

Sincerely,

Bhusal S.

Korkov D.

& Sedigh K.

**Note: An ambidextrous organization is "A company's ability to simultaneously execute today's strategy while*

developing tomorrow's arises from the context within which its employees operate, is ambidexterity within an organization" (Birkinshaw, & Gibson, 2004, p. 1).

Appendix B - Interview Questions

1. Do you have specialized branches like an R&D department for all of the organization?
 - If not, is each department responsible for their own development?
2. How are the different opportunities in the market realized?
 - Does your company follow the market trends?
 - Does your company try to come up with original ideas that can revolutionize the market?

What actions has the company undertaken in the last 5 years towards;

Customer satisfaction

3. What are the recent improvements in customer satisfaction?
 - How is information about customer needs collected?

Reduction of direct labor

4. What steps towards process automation have you considered in the recent years?
 - Has there been an increase/decrease in labor productivity¹?

Reduction of used material/waste and increase of efficiency

5. Have you taken any steps towards reduction of materials/waste in your construction process? If yes, in what way?
 - Has there been an increase in overall efficiency in the use of raw materials?

Optimization of supply chain

6. Have there been any changes in the way you acquire supplies from third party suppliers (from a logistics perspective)?

Implementation of green technology

7. How long has the company been implementing green technology?
 - What is the percentage of green projects your company has undertaken in the recent years (is there an increase/decrease)?

¹ Labor productivity measures the amount of real output produced by an hour of labor.

- Is there an increase in the capital used/staff involved for improvement of green technology (in percent)?

Sustainability

8. What steps have you taken towards improvement of sustainability in the recent years?
 - Is there an increase in the capital used/staff involved for improvement of sustainability? If yes, how much (in percent)

Expansion in new markets

9. Which new markets is the company planning to enter in the recent future? How much increase or decrease (in percent)?

Increase in number of projects

10. What new projects is the company planning to undertake in the recent future?
 - How much increase or decrease (in percent)?

Improvement of organizational structure

11. Have there been changes in the organizational structure in the last 5 years?
 - If yes, what are the changes and the reasons behind them?
 - What is the importance of innovation for the organization and has it had any impact on the structure?
12. Has there been a step in the the recent history of the company, that is considered a failure by top executives?
 - If yes, what were the reasons and consequences?

13. In your opinion how important is ambidexterity in a scale 1-10?

1=Not important at all - 10=One of the most important aspect of our corporation.

14. In the process of being ambidextrous, what obstacles do you encounter?

15. To what extent is your company ambidextrous²? Respond to this question by filling in the following chart.

² *Note: An ambidextrous organization is "A company's ability to simultaneously execute today's strategy while developing tomorrow's arises from the context within which its employees operate, is ambidexterity within an organization" (Birkinshaw, & Gibson, 2004.p. 1).

The chart below helps to measure the extent of ambidexterity of a corporation

Evaluate performance management context							
<i>Managers in my organization...</i>	Not at all			Neutral			great extent
Set challenging/aggressive goals	1	2	3	4	5	6	7
Issue creative challenges to their people instead of narrowly defining tasks	1	2	3	4	5	6	7
Make a point of stretching their people	1	2	3	4	5	6	7
Use business goals and performance measures to run their business	1	2	3	4	5	6	7
Hold people accountable for their performances	1	2	3	4	5	6	7
Encourage and reward hard work through incentive compensation	1	2	3	4	5	6	7
Average Score for performance management context							
Evaluate social support context							
<i>Managers in my organization...</i>	Not at all			Neutral			great extent

Devote considerable effort to developing subordinates	1	2	3	4	5	6	7
Push decisions down to the lowest appropriate level	1	2	3	4	5	6	7
Have access to the information they need to make good decisions	1	2	3	4	5	6	7
Quickly replicated best practices across organizational boundaries	1	2	3	4	5	6	7
Treat failure in a good effort as a learning opportunity, not as something to be ashamed of	1	2	3	4	5	6	7
Are willing and able to take prudent risks	1	2	3	4	5	6	7
Average Score for social support context							
(Blake and Mouton, 1968)							

16. In your opinion what characterizes a successful company?

Appendix C – Follow up Questions

17. Can you describe the majority of teams in charge of projects you undertake? Do they have prior experience together? What competences is the company looking for within a team?

18. How does the company carry out projects in terms of design and construction? Are you always in charge of both design and construction or are there cases when you only conduct one of these processes?

Please explain your answers

Appendix D– Largest construction companies of Nordic region by revenue

(Annual report of SKANSKA, 2011)

Construction, Nordic countries

SEK M	Revenue		Operating income		Operating margin, %		Order bookings		Book-to-build, %		Order backlog	
	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010
Sweden	27,014	23,232	1,287	1,225	4,8	5,3	24,493	39,459	91	170	29,468	31,935
Norway	12,521	11,228	-333	182	neg	1,6	17,786	12,893	142	115	15,414	10,132
Finland ¹	8,166	6,892	-349	-79	neg	neg	8,427	8,685	103	126	6,614	5,903
Total	47,701	41,352	605	1,328	1,3	3,2	50,706	61,037	106	148	51,496	49,970

¹ Including Estonia.

Largest construction companies in the Nordic countries, revenue as of June 30, 2011¹

Company	Country	SEK bn	EUR bn
Skanska	Sweden	119.2	13.2
NCC	Sweden	56.8	6.2
PEAB	Sweden	40.9	4.5
YIT	Finland	38.8	4.3
Veidekke	Norway	18.6	2.0
Lemminkäinen	Finland	17.8	2.0
MT Højgaard	Denmark	10.7	1.2

¹ Rolling 12 months.
Sources: Half-year reports for 2010-2011 for each respective company.



Appendix E – Financial performances of SKANSKA, NCC and PEAB in last 5 years

(Various sources)

Year	2006	2007	2008	2009	2010	2011	Average growth rate
Revenue MSEK SKANSKA	24123	27389	30264	24600	23232	27014	
Growth	-	13.54%	10.50%	-18.72%	-5.56%	16.28%	3.21%

Revenue NCC	MSEK	22098	24881	25508	22241	20962	23574	
Growth		-	12.59%	2.52%	-12.81%	-5.75%	12.46%	1.80%
Revenue PEAB	MSEK	24234	27983	29940	23869.854	25224.6	27867.72	
Growth		-	15.47%	6.99%	-20.27%	5.68%	10.48%	3.67%

Appendix F – Blake and Mouton’s Managerial Grid (1968)

