Achieving Organizational Ambidexterity
(Understanding and explaining ambidextrous organizations)

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(Understanding and explaining ambidextrous organizations)

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Background: Responding to fast technological and environmental changes brings about challenges and paradoxes for companies that should be resolved in order to survive long-term and to achieve a sustainable competitive advantage. Ambidexterity is considered a solution to organizational paradoxes.

Aim: The purpose of this research is to explore how firms can achieve ambidexterity to handle organizational paradoxes in different market conditions using their dynamic capabilities.

Definitions: Ambidexterity: The ability of organizations to handle adaptability and alignment, exploration and exploitation at the same time
Dynamic capabilities: The firm’s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments
Exploration: Activities such as innovation, discovering new opportunities, variation
Exploitation: Activities that concern efficiency, implementation and execution

Results: There are possible options that companies can follow to achieve ambidexterity. These sets of options are distinguished as external vs. internal, sequential vs. parallel, structural vs. contextual and the role of senior management behaviour. Depending on market dynamism and environmental conditions, a different set of options could be suitable for different companies. In addition, companies can enhance the likelihood of achieving ambidexterity using their dynamic capabilities.

Keywords: Organizational Ambidexterity, Exploration & Exploitation, Organizational Paradoxes, Dynamic Capability, Market Dynamism, Organizational Change
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List of Abbreviations

BT - BT products AB
GSM - Global System for Mobile communication
IPO - Initial Public Offering
NATO - North Atlantic Treaty Organization
PACS - Picture Achieving and Communication System
R&D - Research & Development
RBV - Resource Based View
Sectra - Sectra AB
TICO - Toyota Industry Corporation
TIESA - Toyota Industrial Equipment S.A.
TMHE - Toyota Material Handling Europe
TMHG - Toyota Material Handling Group
TMHI - Toyota Material Handling International
TMHJ - Toyota Material Handling Japan
TMHNA - Toyota Material Handling North America
VRIN - Valuable, Rare, Inimitable and None-substitute
Introduction

The objective of this chapter is to give a background to our thesis. The chapter will start with looking back regarding our topic and follow by highlighting the problem areas which conclude to our research questions.
1. Introduction

1.1. Background

“It is not the strongest of the species that survive, nor the most intelligent, but the one that is most responsive to change.”

Charles Darwin (in O’Reilly & Tushman, 2008:186)

This research addresses one of the most recent areas in the field of business; that is Organizational Ambidexterity. The word “ambidexterity” was first introduced into the business literature by Duncan who suggested a dual structure for an organization to follow the activities related to both adaptation and alignment at a sequential order (Duncan, 1976).

A considerable discussion in the field of management for a long time have been concerning how the organizations have to adapt themselves to changes that constantly happen internally and externally in order to survive. In this regard, the concept of ambidexterity has been mentioned as a way for organizations to manage and to adapt to changes in their environment at the same time as aligning the structure and processes with their strategies and objectives.

Another issue discussed in the business texts since years ago is what has sometimes been called “The Innovator’s Dilemma” (Christensen, 1997); that is a challenge confronted by innovative companies how to manage fast changing environments through involving simultaneously in both exploitation and exploration activities. The innovator’s dilemma addresses the successful organizations’ failure to respond to disruptive technological innovation in their relevant industries while they logically make right decisions. Ambidexterity has also been suggested as a reasonable solution to get rid of such dilemma (O’Reilly & Tushman, 2008:202).

In addition, a very possible danger for every successful organization to fall into is a tendency to hold its current way, strategy, and objectives and to get engaged in a kind of phobia about change. This tendency may direct the organization towards a situation that is called “Paradox of Success” (Tushman & O’Reilly, 1996; Audia, et al., 2000). Ambidexterity has also been mentioned as a solution for organizations to avoid and overcome the paradox of success (Tushman & O’Reilly, 1996:24).

In different literature ambidexterity has been considered as a critical factor to achieve sustainable competitive advantage (O’Reilly & Tushman, 2008; Smith & Tushman 2005). Organizational adaptation is rooted not only on short-term efficiency but also long-term innovation. Ambidexterity responds to meeting both short-term and long-term agendas in order to achieve sustainable competitive advantage for organizations.

The above lines highlight the importance of ambidexterity as a phenomenon that has attracted the attention of business scholars. However, this issue is still under lots of
discussions to find out how it can be achieved by firms. In following section, we describe the problem areas related to the theory of organizational ambidexterity and its relevant concepts and will end up with research questions.

1.2. Problem area

Nowadays, companies are struggling with being efficient in form profitability, and alignment in one hand and being effective in form of adaptation and flexibility on the other hand. In other words, companies should not only focus on exploitation but also should aim for exploration especially in high-velocity markets. If companies fail to achieve these two aims at the same time, they may lose the long term success. According to O’Reilly & Tushman (2008), “being large and successful at one point in time is no guarantee of continued survival”. This seems as a challenge for companies who want to have a long life.

Studies showed only few enterprises survived out of 266 firms during the period of 1984-2004 (Devan, et al., 2005). The main reason behind this failure was lack of adaptation to market changes resulting in low performance. This challenge, in other words, has been called as paradox of success. It means that as companies get bigger and older, the complexity of their structure and system will increase and, as a result, they will be resistant to changes (Tushman & O’Reilly, 1996:18; Audia, et al., 2000). To overcome this paradox, companies should not be only successful in existing market but also flexible enough to adapt to new markets. This is a challenge that companies can not deal with easily.

As one solution, business scholars suggest companies to have the characteristics that are referred as being ambidextrous; i.e. having both revolutionary and evolutionary changes (Tushman & O’Reilly, 1996). Revolutionary change in terms of organizational process design and evolutionary change in shape of organizational process improvement in order to capture value (O’Reilly & Tushman, 2008). However, organizational processes such as product development, alliances, joint venture and innovation (Eisenhardt & Martin, 2000; O’Reilly & Tushman, 2008) are the mechanisms through which dynamic capabilities are developed and deployed (Helfat, et al., 2007). Dynamic capabilities, in turn, can facilitate those kinds of activities in companies which are conducted to achieve ambidexterity. But to understand how dynamic capabilities contribute to achieve ambidexterity is a big challenge for companies. This research also addresses this challenge.

Our main concern is about how to achieve organizational ambidexterity which is under a big question in the business world and there are many opinions regarding that. Christensen (1997) claimed that achieving ambidexterity is impossible but O’Reilly & Tushman (2008) believed that under appropriate conditions companies may achieve it. Different opinions between business scholars and mystery behind the organizational ambidexterity make this concept interesting for us and it is the point of departure in our research. In addition, most literature in this field claim that ambidexterity is a critical concept in highly turbulent markets. It seems there are no or few discussions about this
phenomenon in other market conditions. Therefore, we think that different market conditions should be considered in research on ambidexterity as well. The abovementioned problems bring us a set of research questions to be addressed in this research.

1.3. Research purpose and questions

The purpose of this research is to explore how firms can achieve ambidexterity to handle organizational paradoxes in different market conditions using their dynamic capabilities. Considering this purpose and the problems identified in previous section, we can come up with a set of research questions as follows:

• What are the possible options for companies to achieve organizational ambidexterity?

• Does market dynamism (condition) affect the options through which companies achieve ambidexterity?

• How an organization’s dynamic capabilities are related to the organizational ambidexterity?

1.4. Target groups

This thesis addresses senior managers in corporate level at those multinational companies who face change in their business environment and, therefore, need to consider both incremental, evolutionary changes and radical, revolutionary changes to align with organization’s strategies and to adapt to their environment; i.e. to target both short- and long-term success. This study also could be interesting for business students and researchers who are interested in issues related to change management, organizational change, and those who want to know more about the concept of organizational ambidexterity.
The objective of this chapter is to present the theory parts about ambidexterity. We will start with elaborating this concept in details followed by possible options for realizing ambidexterity. The chapter will continue with the concept of dynamic capabilities and its linkage to organizational ambidexterity.
2. Theoretical Frame of References

2.1. Organizational Ambidexterity

From terminology perspective, the word “ambidextrous” has been meant as being able to use both hands equally at the same time (Cambridge online dictionary). In business world, the term was first introduced in the literature by Duncan (1976).

As the economic uncertainties highly increase during recent years, the issue of adaptabilities which focus on “ability to move quickly towards new opportunities and adjust volatile markets” gets crucial. However successful companies should not just go for new opportunities but also should have the “ability to exploit the value of the proprietary assets and roll out existing business models quickly”; this ability makes the meaning of alignment significant (Birkinshaw & Gibson, 2004:47). In other words, companies should not just aim for exploring the future, discontinuous innovation, targeting for new customers or even revolutionary change but also have to, at the same time, focus on existing customers, incremental innovations and evolutionary change. Ambidexterity is the ability to be master in the sides, adaptabilities and alignment (Birkinshaw & Gibson, 2004:47). As a result, companies should balance between exploration and exploitation because achieving sustainable competitive advantage occurs through ambidextrous organizations.

In this part, we first review the literature on the concept of ambidexterity and then will take a look at the other issues and topics that are closely related to the concept of ambidexterity without mentioning its name itself. In other words, every concept that represents a kind of duality in organizations inheriting organizational paradox will be briefly reviewed and described in the second section of this part.

2.1.1. Earlier Researches on Organizational Ambidexterity

The research on the concept of ambidexterity dates back to 1976 when Duncan, who first brought the word ambidexterity into business literature, took a structural perspective on the concept. He suggested a dual organizational structure for the firms that want to follow two different approaches towards innovation; one is to start or develop innovative activities; i.e. exploring innovation and the other is to implement or deploy innovative activities; i.e. exploiting innovation. He interpreted ambidexterity as a sequential concept through which organizations focus on either exploration or exploitation at a time but in a long-term they follow both approaches.

Tushman & O’Reilly (1996) point out the concept of “Paradox of Success”; the challenge confronting, in a long-term, with seemingly successful organizations and suggest the ambidexterity as a solution to overcome such dilemma. They define ambidexterity as the ability of an organization to manage both incremental, continuous improvements called as evolutionary changes and radical, discontinuous changes called
as revolutionary changes at the same time. They highlight a set of common features that all ambidextrous organizations seem to have including differentiated organizational structure, strong, tight-loose corporate culture and common values across the firm, and so-called ambidextrous top managers who integrate different units and values across the firm.

Birkinshaw and Gibson (2004), on the other hand, define ambidexterity as the ability of the company to pursue both long-term development of products, markets, and technologies; called adaptability, and short-term profitability and coordination; called alignment. They go beyond the structural perspective and describe two kinds of ambidexterity including contextual and architectural ambidexterity as a result of their comprehensive survey in 10 multinational companies. They have also described the concept in an individual level distinguishing four characteristics of ambidextrous individuals. They believe that in order for employees to behave ambidextrously, the organizational context should be managed and prepared by top managers. In this regard, they distinguish four types of organizational context in terms of two dimensions of performance management and social support. Their study shows that an ambidextrous context is enhanced when both abovementioned dimensions are in a high level. Finally, they offer some recommendations for high-level managers how to make their organizations ambidextrous.

Literatures highlight some consequences of achieving ambidexterity over the organizations. For instance, ambidexterity results in the better organizational performance (Gibson & Birkinshaw, 2004; Smith & Tushman, 2005), long term success (Raisch, et al., 2009) and sustainable competitive advantage (O’Reilly & Tushman, 2008). On the other hand, a few literatures have pointed out some negative consequences of ambidexterity. Gibson & Birkinshaw (2004), in a few words, point out the cost of achieving ambidexterity for an organization. They do not open the details and just insist that the benefit and advantages gained from ambidexterity are much higher than the cost of establishing an ambidextrous system, processes, and context for an organization. However, they clarify that the cost of ambidexterity would be higher when an organization wants to create a dual structure for conflicting activities.

Smith & Tushman (2005) address that companies should be efficient and effective at the same time in order to have long-term performance. In this condition, senior managers also are pushed to search both forward and backward and to be flexible and focused simultaneously. In addition, Raisch, et al. (2009) also pointed that organization’s long-term success depends on both exploiting their current capabilities as well as exploring new competencies. However, earlier research was discussing about trade-off between these two but more recently the concept of organizational ambidexterity highlights the importance of having both current capabilities as well as going for new opportunities (Raisch, et al., 2009). However, other authors consider the effect of technological changes on ambidexterity. They believe that technological changes push companies to follow completely new core technology. In this regard, companies utilize their existing capabilities while using new technology. In other words, they not only exploit existing knowledge and competences but also explore new knowledge and possibilities in order to respond to technological changes (Taylor & Helfat, 2009).
The ability of an organization to persuade both alignment and adaptability or, in other words, both exploitative and exploratory actions at the same time and without making a trade-off between these seemingly paradoxical work areas gives the organization a sustainable competitive advantage and long-term performance. In other words, ambidexterity makes a firm to gain both short-term success and long-term survival especially in turbulent business environments.

2.1.2. Research on other topics related to ambidexterity

In this part we review the literature related to other concepts that show paradoxes in organizations. These concepts are related to organizational ambidexterity even though they do not explicitly mention the phenomenon.

2.1.2.1. Exploration vs. Exploitation

One of the related concepts to ambidexterity is exploration and exploitation. Lots of researches have been done in this field because surviving in changing environments need adaptation which requires both exploration and exploitation (March, 1991). According to March (1991), exploration is more about activities such as innovation, discovering new opportunities, variation and etc however exploitation includes production, efficiency, implementation and execution. For the firms it is crucial to consider the both sides; the exploring new possibilities, knowledge and technologies on the one side and on the other side exploiting the current and existing sources and knowledge (Soosay & Hyland, 2008).

Managing to have both concepts is not an easy task because these two are associated with fundamentally different organizational architectures, processes, competencies and logic (Smith & Tushman, 2005). For instance, exploration is rooted in variance-increasing activities and focuses on learning by doing and trial and error, whereas exploitation is more rooted in variance-decreasing activities and disciplined problem-solving and learning before doing. Besides, where exploitation builds on an organization’s past, exploration focuses more on future that maybe quite different than organization’s past (Smith & Tushman, 2005:522). As a result, managing to have both exploration and exploitation creates paradoxical challenges and tensions (Jansen et al., 2008:983; He & Wong, 2004). In order to overcome the tensions companies need to allocate their resources in the best way as well as to realize the relations between exploration and exploitation and see them as complementary not substitutes.

Regarding resources allocation, assigning more resources to exploration activities reduce the speed of improving exploitation activities, because it can bring high costs for the firms without realizing any benefits. In other words, focusing too much on exploration drives out efficiencies and will not let company learn by doing and gaining economies of scale (He & Wong, 2004). However, focusing more in existing procedures drives inertia and makes the companies less aware of targeting for new possibilities and trapped them in routines (March, 1991). The possibilities to trap in routine for companies is quite high especially those that more focus on exploitative activities because exploitative activities give them the certain experience that is more desirable
and predictable for them and lead them to have more exploitation rather than exploration.

To view exploration and exploitation as complementary means realizing the relation between them in a way that exploitation of current capabilities is often required to explore new possibilities and exploring new opportunities helps companies to enhance their existing capabilities and current products (Katila & Ahuja, 2002; Leonard-Barton, 1992; Gibson & Birkinshaw, 2004). Besides, the knowledge that they gain during both exploration and exploitation will help them for further development. It should be also mentioned that both exploration and exploitation are associated with learning and innovation but not in the same type (Gupta et al., 2006). Those Learning that are gained through local search, selection and reuse of existing routines are more related to exploitative activities and learning via planned experimentation and beyond local search are more referred to as exploration activities (Baum, et al., 2000: 768). These kinds of learning make companies more professional in the market.

In addition, if interplay between exploration and exploitation do not just take place in the firm but also between organizations, besides intra-organizational learning, inter-organizational learning will also happen (Holmqvist, 2004). Intra-organizational learning comes from “exploitative organizational rules of refinement and explorative rules of experimenting and trialing” whereas inter-organizational learning “achieved by formal organizations collaborating in strategic alliances and other inter-organizational collaboration” (Holmqvist, 2004). Exploration and exploitation is a critical concept and result in many mechanisms and perspectives. After March’s initial premise that companies require to have both exploration and exploitation (March, 1991), authors found out there are some issues regarding exploration and exploitation that are completely different from each other. These issues are orthogonality versus continuity, ambidexterity versus punctuated equilibrium and duality versus specialization (Gupta et al., 2006).

The first issue is about if exploration and exploitation should be considered as the two ends of continuum or they are different and orthogonal aspects of organizational behavior. However this depends on treating exploration and exploitation as competing or complementary aspects of organizational actions (Gupta, et al., 2006). Logics indicate that if exploration and exploitation “compete for scarce sources, attention and organizational routine” it should be viewed as two ends of continuum (Gupta, et al., 2006:695). However, some authors do not believe that resources are scarce. Shapiro & Varian (1998) argued that companies can not suffer from the lack of resources too much because organizations can use alternative resources. If some resources are finite, some others like knowledge or information are infinite. In addition, firms can use resources from the external environments (Powell, et al., 1996). It is not easy to say that if companies do not face with scarce resources, exploration and exploitation is viewed as orthogonal because this also depends on the level of analysis. For instance, in organization, group or big systems level it is easier to have exploration and exploitation at the same time rather than in individual level (Gupta, et al., 2006:696). So, within a single domain exploration and exploitation are more mutually exclusive and viewed as two ends of continuum but across different domains, exploration and exploitation are conceptualized as orthogonal.
The second issue refers to ambidexterity versus punctuated equilibrium. Balancing between exploration and exploitation can occur through having both simultaneously which means ambidexterity or via temporal cycle between them that is defined as punctuated equilibrium (Gupta, et al., 2006). It is difficult to choose one mechanism among them because they are very different but both are logical and viable. In addition, they also depend on the level of analysis. Gupta and his colleagues suggested that when analysis is limited in a single domain and exploration and exploitation conceptualized as two ends of continuum, punctuated equilibrium is the better mechanism for balancing exploration and exploitation. However, when analysis takes place in multiple domains and exploration and exploitation are realized as orthogonal, the appropriate mechanism to balance exploration and exploitation is ambidexterity; having both at the same time (Gupta, et al., 2006:698).

The third issue focuses on duality versus specialization. The first two issues consider the argument of March regarding balancing between exploration and exploitation (March, 1991), but here authors want to examine is it logical to have long term survival without making balance, just focus solely to exploration or solely to exploitation? To answer this question, Gupta and his colleagues suggested that when some subsystems interact with each other, each sub system can only focus on exploration or exploitation and this won’t result any major threats to long term survival (Gupta, et al., 2006). This highlights the meaning of specialization whereas duality refers to having both exploration and exploitation in each subunit. The concept of specialization is close to what other authors called differentiation. Differentiation “refers to the separation of exploitative and exploratory activities into distinct organizational units” (Raisch, et al., 2009:685). This concept is one of the options for achieving ambidexterity which will be described later under the title of architectural vs. contextual ambidexterity.

There are also other views exist regarding exploration and exploitation. For instance, exploration is categorized by technological boundary spanning and organizational boundary spanning in four types of explorations which are local, external boundary-spanning, internal boundary-spanning and radical (Rosenkopf & Nerkar, 2001) as shown in figure 2.1. These four types of exploration consider whether the knowledge is provided externally or internally (the x-axis) and whether the knowledge is from similar or distant technology (the y-axis).

According to Rosenkopf & Nerkar (2001), Local exploration refers just to use similar technologies within the company which means both organizational and technological boundaries are not spanned during this type of exploration and all exploration activities are done within technological sub-unit. In contrast, radical exploration build upon technologies provided from outside organizations and technological subunits use knowledge from a different technological domain so both organizational and technological boundaries are spanned during radical exploration. The two other exploration types are between extremes of local and radical exploration.
Internal boundary-spanning exploration integrates technologically distant knowledge residing within the organizational boundary. The technological subunit uses knowledge from a different technological domain, but it is able to get that knowledge from another subunit within the organization. However, external boundary-spanning exploration is in contrast. This type of exploration integrates knowledge from other organizations that is close and similar to the technology of interest. In other words, the technological subunit uses knowledge from its own technological domain, but obtains the knowledge from external sources. According to the empirical studies of Rosenkopf & Nerkar (2001), internal development of technology is not sufficient for being sustainable. Organizations need to integrate external developments as well. In addition, internal boundary spanning exploration would have the lowest impact, and external boundary spanning exploration would have the highest impact. As a result the role of external sources and knowledge gets crucial here. Later on we will discuss about externalization, using external resources such as alliances and outsourcing, as one way to achieve ambidexterity.

Rothaermel & Alexandre (2009), also categorized exploration and exploitation in four categories regarding using whether internal resources or external resources (the x-axis) and using whether new technology or known technology (the y-axis). These four types are mentioned as internal exploitation, external exploitation, internal exploration and external exploration as shown in figure 2.2. Internal exploitation generates known technology from internal sources and it is in contrast with internal exploration that focuses on new technology from external sources. However, a firm sources known technology from external sources engages in external exploitation whereas a firm with new technology from internal sourcing engaged in external exploration. In order to stay competitive in the market organizations need to engage in sufficient exploitation for insuring their current viability as well as putting enough energy to ensure for their
future viability (Rothaermel & Alexandre, 2009). To achieve the balance between exploration and exploitation organizations can source internally as well as externally.

<table>
<thead>
<tr>
<th>Technological boundary</th>
<th>New technology</th>
<th>Known technology</th>
</tr>
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<tbody>
<tr>
<td>Internal exploration</td>
<td>External exploration</td>
<td></td>
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<tr>
<td>Internal exploitation</td>
<td>External exploitation</td>
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</tbody>
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Organizational Boundary

*Figure 2.2 Types of Exploitation and Exploration Along Technological and Organizational Boundaries
Source: Rothaermel & Alexandre (2009)*

To conclude from reviewing literature and our findings, exploration and exploitation are associated with different and inconsistent organizational architecture and processes and in order to get competitive advantage organizations should balance between exploration and exploitation. Making balance between these two different issues is not an easy task and creates fundamental organizational and senior team challenges. The role of the senior team gets significant here in order how to overcome the challenges and combine exploratory and exploitative activities in order to achieve sustainable competitive advantage through ambidextrous organizations. We will describe the role of senior executive team and how it effects on ambidexterity in details later in this chapter.

2.1.2.2. Organic vs. Mechanistic

Another concept which is related to ambidexterity is the concept of organic and mechanistic. Organic organizational form is suitable for changing, especially in a situation of technological and environmental changes however mechanistic system cannot cope with rapid changes easily. Mechanistic organizations are more hierarchy and appropriate for routine tasks and stable environments whereas organic organizations are more flat and highly adaptable and flexible to environmental and technological changes. In organic organizational form, there are less instructions and decisions set in organizations and more information and advices are provided by managers. This results in more communication and interaction between subordinate and superiors. However, as mentioned before, mechanistic procedures are better for stable environments and, as a result, if companies want to survive and grow more they need to follow organic procedures as well. When novelities are reduced and more routine tasks will appear in companies, firms can follow mechanistic procedures (Burns & Stalker, 1961). Considering this definition and relating it to definitions of exploration and exploitation,
we can conclude that mechanistic structure is more appropriate for exploitation while organic organizational form helps companies following exploration.

2.1.2.3. Effectiveness (flexibility) vs. Efficiency

Another related topic to ambidexterity is efficiency and effectiveness or short-term profitability and long-term flexibility. Companies that want to be efficient need a “bureaucratic form of organization with high levels of standardization, formalization, specialization, hierarchy, and staffs” however, flexibility is more related to follow new task goals through organization’s innovation capabilities (Adler, et al., 1999). When the goal is efficiency companies follow mechanistic procedures and when the goal is effectiveness companies pursue organic procedures (Bums & Stalker, 1961). Short-term profitability helps company competing in a mature market by increasing efficiency and incremental innovation. However, increasing short-term efficiency is not sufficient for long-term success (Tushman & O’Reilly, 1996). Companies need to be flexible in order to adapt themselves to technological and environmental changes. Long-term adaptability is associated with developing new products and services through flexibility, radical innovation and speed (Tushman & O’Reilly, 1996; Smith & Tushman, 2005). In order to have competitive advantage and sustained performance, especially in high-velocity markets, companies need to follow short-term efficiency as well as long-term flexibility (Smith & Tushman, 2005).

2.1.2.4. Revolutionary vs. Evolutionary changes

(Radical vs. Incremental, Discontinuous vs. Continuous)

When we talk about change in an organization, basically two major types or two main approaches to change can be distinguished. One approach is a continuous, incremental change in current status of the organization that is referred to evolutionary change. The second approach concerns radical change entering into a completely new status that is usually called as revolutionary change. Managing these two different types of change in order to achieve both at the same time is such big challenge for many organizations that only few of them succeed to make a balance between these two approaches. There are many examples of firms that periodically focus on one type of change in their lifecycle in a way that long periods of evolutionary change are interrupted by a sudden, revolutionary change in their market, technology, or structure. Tushman & O’Reilly (1996) show several firms which failed to overcome their internal inertia to make big, radical transformations and firms which focused only on one change approach. They conclude that in order to make both incremental and radical changes at the same time some organizational and managerial competencies are required. These capabilities help organization making proactively some revolutionary changes; otherwise they will be forced to reactively make some changes in response to environmental shifts. To understand organizational growth some patterns are distinguished.

One is based on the biological theory of evolution including three stages of variation, selection, and retention (Tushman & O’Reilly, 1996; Van de Ven & Poole, 1995). According to this pattern, firms develop through the process of innovation (variation), differentiation (selection), and cost (retention) during which they experience long periods of evolutionary change punctuated by short, rapid revolutionary change. Another pattern that indicates the necessity of evolutionary along with revolutionary change is based on technology cycle. According to this pattern, firms evolve
incrementally during the period when there is stability in their product technology and change happens only in their processes. However, they need revolutionary change once a shift in technological paradigm occurs. As firms become older and bigger they can always face the risk of inertia in two forms: cultural inertia and structural inertia (Tushman & O’Reilly, 1996). Structural inertia refers to inability of an organization to change because of its size, complexity and interdependency of its structures and processes. Cultural inertia, on the other hand, refers to inability of organization to change because of some established norms, values, and social networks over time. In volatile markets, this inertia causes failure and must be overcome. Ambidextrous organization is a solution to this paradox where firms consider their short-term efficiency and alignment by evolutionary changes and their long-term success by revolutionary changes of old, ineffective structures and beliefs at the same time (Tushman & O’Reilly, 1996).

2.2. Options for Realizing Ambidexterity

There are many options that companies can follow to achieve organizational ambidexterity and to handle the paradoxes caused by it. In the following lines we will describe each of these options in detail.

2.2.1. External vs. Internal

As mentioned before, in rapid changing environments, companies face the pressure to change. They want to adapt themselves to fast changing environment not just because of survival but also the desire of the companies to grow and stay successful (Baden-Fuller & Volberda, 1997:97). But the pressure of adaptation causes tension for the firms. According to Baden-Fuller & Volberda, to overcome this tension, companies can use internal adaptation or outsource the change problem to others (Baden-Fuller & Volberda, 1997). In other words, to have long term survival, firms require both exploration and exploitation (March, 1991) or so-called ambidexterity which brings about tensions. To resolve these tensions, firms can use either internal resources and technologies or external resources through activities such as outsourcing and alliances or both of them. However, there are different opinions regarding this issue.

Earlier research in this field focused more on gaining sustainable competitive advantage through firm’s specific resources and competences (Barney, 1991; Porter, 1991) but, on the other hand, some authors said no single company has all the internal resources and capabilities which lead them to success (Powel, et al., 1996). In addition, scholars found out sustainable competitive advantage relies more on ability to move beyond local search and take a part in inter-organizational collaboration (Rosenkopt & Nerkar, 2001; Holmqvist, 2004) because then firms have an advantage to use those external skills and resources that are not produced internally (Powel, et al., 1996). Outsourcing is one way to use external resources. Outsourcing defines as transferring of those activities that are not performed in-house to an external party (Ellram & Billington, 2001). However, companies should be careful not to outsource the core competences because the core competences such as skills and knowledge of companies, unique sources of leverage in
the value chain and companies’ dominant activities and areas provide them with long-term competitive advantage (Quinn & Hilmer, 1994).

Another way of using external resources is alliances and it can be categorized into exploration alliances and exploitation alliances (Rothaermel & Deeds, 2004). What authors mean by exploration alliances is focusing on “R” in research and development by using resources and skills to discover something new through inter-organizational collaboration which result in product development. However, exploitation alliances more concentrate on using “D” in research and development and it occurs via cooperation in existing competencies between companies in order to generate synergies leading to have more products or services on the market (Rothaermel & Deeds, 2004).

To make decision about being internalize or externalize is difficult. Because each has its own advantage or disadvantage. If some companies restrict themselves to use internal technologies or resources, it is because of lack of trust, fear of getting more risk rather than benefit and bad prior experience with alliances (Rothaermal & Deeds, 2004; Powel, et al., 1996) but on the other hand they should consider that using resources, technology, and knowledge beyond organizational boundaries can result in sharing risks, low cost, speeding products and services to the market, and greater possibilities to access to new markets (Kleinknecht & Reijnen, 1992; Eisenhardt & Schoonhoven, 1996). In addition, Rosenkopf and Nerkar (2001) found empirical evidence that exploration which is done beyond organizational boundaries had more impact rather than exploration within organizations and also the risk of being obsolesces will be high if companies just use their knowledge and resources internally (Eisenhardt & Martin, 2000). Another advantage of going beyond local search is using second-order competences. It means that besides using first-order competences which occur through focusing on similar technology and current domain, companies should target for knowledge across the organizational boundaries (Rosenkopf & Nerkar, 2001:288). In other words, second-order competences will be gained when companies go beyond their local search and create new knowledge through the collaboration with other companies. However, it is good for companies to have the combination of both first-order and second-order competences in order to be more successful because just having the first-order competences and getting more and more expert in current domain may result in “core rigidity” (Leonard, 1998). Core rigidity is an inappropriate set of knowledge that makes problem for companies especially for those projects within a firm that designed to create new, nontraditional capabilities. It obstructs innovation in development projects because those companies that fall in core rigidity are less strong in domains and skills that are new and they did not experience before (Leonard-Barton, 1992). Therefore, in order not to fall in core rigidity it is good for companies to have some second-order competences.

Making a decision about in which conditions companies should do internalization or follow collaboration with other companies via outsourcing or alliances is difficult. Leonard (1998) argued about in which conditions companies should follow external acquisition and outsourcing or internal research and development. He made a figure with two important dimensions; strategic importance and degree of familiarity with technology within the firm as shown in figure 2.3.
The figure shows that in the lower left-hand corner, there is a little reason to invest in a situation when a technology is not strategically important for companies and with which the firm has little experience. However, technologies that companies are both familiar with them and capable in but they have less strategically importance can be outsourced to other firms. When technologies are strategically important for companies and they have high familiarity with them, it is better to be done in-house through internal R&D. External acquisition can be done when strategic importance is high but companies’ internal knowledge is incomplete or out of date (Leonard, 1998).

To summarize, it is crucial for companies to realize how to move in the box as shown in figure 2.4 and how to split their exploration and exploitation activities by using internal and/or external resources. The figure 2.4 shows three dimensions: exploration activities, exploitation activities and resources. The companies’ exploration and exploitation activities occur by using internal resources and/or external resources. However, they should find out how to move in the box and accept the consequences by moving in each direction. By using lots of internal resources the possibility to fall in core rigidity is high. As a result, companies should move in the direction of using external resources so they can extent their organizational boundaries via exploration alliances or exploitation alliance. The suggestions is that to start with exploration alliances for product development and continue with exploitation alliances in order to enhance the ability to discover, develop and commercialize the new products and services (Rothaermel & Deeds, 2004). However, it is crucial not to use too much external resources as the risk of losing focuses on core competence will appear. Therefore, how to move in the box is a critical issue; on one hand not just stick to the internal resources within a company but, on the other hand, not also go too much to the direction of using external resources.

**Figure 2.3 Need for External Sourcing of Technology**

Source: Leonard (1998)
2.2.2. Sequential vs. Parallel

There are different mechanisms suggested by business scholars for making balance between exploration and exploitation activities in order to achieve ambidextrous organizations; one is sequential and the other is parallel balance. Some authors have mentioned that ambidexterity can arise from punctuated equilibrium or sequential attention to exploration and exploitation (Burgelman, 2002; Siggelkow & Levinthal, 2003; Benner & Tushman, 2003). However, some other authors suggested that the balance can be achieved through taking both exploration and exploitation parallel or simultaneously (He & Wong, 2004; O’Reilly & Tushman, 2008; Jansen, et al., 2008). As a result, business scholars argued if the long term adaptation for the company follows a punctuated equilibrium pattern or it follows more continuous exploration and exploitation activities at the same time (Burgelman, 2002; Benner & Tushman, 2003). Therefore, it is difficult to choose one between them as both are logical and viable while completely different. In the following lines we will elaborate the two concepts of sequential or punctuated equilibrium and parallel or simultaneous as the mechanisms for making balance between exploration and exploitation in order to achieve organizational ambidexterity.

Punctuated equilibrium depicts organizations as evolving through long periods of stability (equilibrium periods) in their activities that are punctuated by fundamental changes (revolutionary periods) and each revolutionary periods require having new equilibrium periods (Tushman & Romanelli, 1985). Punctuated equilibrium is a pattern involving a series of separate periods, each focuses on exploration or exploitation activities (Burgelman, 2002). This view, punctuated equilibrium is in contrast with focusing more on continuous evolutionary process of balancing exploration and exploitation. 

![Figure 2.4 Exploration and exploitation through internal vs. external resources](image-url)
exploitation (Burgelman, 2002). In other words, the continuous view of balancing or having exploration and exploitation simultaneously pushes organizations to move slowly with environment. As a result, it requires loose-coupling structure which means elements in organizations tied together weakly with minimal interdependencies (Weick, 1976) so that changing in each part won’t result in a big crash for the whole company. In contrast, Punctuated equilibrium stresses the interdependencies of organizational subunits (Tushman & Romanelli, 1985).

According to Tushman & Romanelli (1985), those organizations that frequently transformed their structure, strategies and their system radically and quickly through short and discontinuous burst of change have better performance than organizations that change gradually or incrementally through continuous adaptation. In contrast, He & Wong (2004) argued that as ambidexterity causes tensions in an organization, it is better for companies to have continuous adaptation towards environmental changes in order to manage the tensions. Besides, to overcome the paradoxes in decision-making in a rapid changing environment companies can get better result with pursuing exploratory and exploitative activities simultaneously (Jansen, et al., 2008:983).

According to Siggelkow & Levinthal (2003), exploration activities and keeping the current stability through exploiting are not achieved simultaneously but through sequential balancing between exploration and exploitation.

On the other hand, Gupta and his colleague argued companies can decide which mechanism is better for them. For instance, if organizations conceptualize exploration and exploitation as two ends of continuum, which already described in this thesis under the subheading of exploration and exploitation, punctuated equilibrium is the better mechanism for balancing between them. However, if exploration and exploitation are realized as orthogonal, which discussed before, the appropriate mechanism to balance exploration and exploitation is having both at the same time (Gupta, et al., 2006:698).

Some authors also pay attention to the environmental changes. Regarding this issue, in slower rate of change in the market and technology, as the need for exploration is reduced, ambidexterity may require to be done more sequential than simultaneously because the rate of change in markets and technologies proceeds at a pace that allow firms to follow organizational alignments sequentially, however in rapid and fast changing environments ambidexterity may need to be done in parallel (O’Reilly & Tushman, 2008) because companies need to react as fast as possible regarding realignment of current system, structure and processes as well as pushing for exploration otherwise they cannot survive in a fast changing environment.

To conclude, it is not easy to say ambidexterity should achieve sequentially or simultaneously. Because many factors exist to consider such as conceptualizing exploration and exploitation as two ends of continuum or as orthogonal, the rate of market and technology changes, etc. As a result, ambidexterity may be achieved through both simultaneous and sequential attention to exploitation and exploration (Raisch, et al., 2009; Gupta, et al., 2006). In other words, organizations can balance exploration and exploitation through simultaneous mechanism or temporal cycle between them but the significant issue is to choose the right mechanism which fit the situation of the company and the environment.
2.2.3. Architectural (Structural) vs. Contextual

The concept of organizational ambidexterity has been traditionally defined or interpreted as a dual, separated organizational structure since when it was first introduced into the business literature. Nevertheless, the concept does not only concern the organizational structure but also many other aspects in the organization affect and are affected by the ambidexterity phenomenon. After long years of defining ambidexterity as a kind of organizational form and structure, Gibson and Birkinshaw (2004) introduced the concept of contextual ambidexterity that will be described in the following lines.

Structural ambidexterity, itself, refers to a set of structural solutions to handle the situations in which an organization faces opposing, paradoxical options. In these solutions, the organization creates separate structures each of which pursues and focuses on a different, single activity. For instance, some organizational units/functions are involved in activities regarding alignment and exploitation while some others such as R&D and business development groups are more associated with activities such as adapting to new environmental changes and exploration (Birkinshaw & Gibson, 2004). There are two kinds of such structural ambidexterity; “task partitioning” and “temporal separation” (Gibson & Birkinshaw, 2004). These are mechanisms by which tasks and responsibilities within each organizational unit/function are divided between conflicting works. By task partitioning the unit’s/function’s people are divided between alignment- and adaptability-related tasks while by temporal separation whole the unit/function is involved some times in exploratory activities and some other times in exploitative tasks. However, there is another kind of structural ambidexterity where an organization creates a new, different unit to follow a different conflicting option. When there is a separated organizational structure to achieve ambidexterity a mechanism to coordinate the divided activities and structures is necessary.

Raisch, et al. (2009) mentioned that when companies pursue exploration and exploitation within a business unit they follow integration mechanism. In contrast, when companies divide their organizational units into separate exploitative and exploratory activities, they follow differentiation mechanism. However, those organizational units that pursue exploratory activities are considered as more decentralized and more flexible than those who are involved in exploitative activities (Benner & Tushman, 2003). Raisch, et al. (2009) believes that differentiation is not sufficient for achieving ambidexterity because this mechanism does not combine exploration and exploitation in each organizational unit. They highlight the role of senior managers to integrate differentiated units in order to create value that will be discussed in another section.

However, it is crucial to consider not only ambidextrous structure but also ambidextrous context. Although structural separation is necessary as each of exploration and exploitation activities are completely different, it can result in isolating of each organizational unit/function because structural ambidexterity more relies on manager’s decisions to divide the time or task of employees between exploratory and exploitative activities whereas contextual ambidexterity brings about an environment in which every employees can decide whether to do exploration or exploitation. As a result, contextual
ambidexterity should be considered as a complement to structural ambidexterity (Birkinshaw & Gibson, 2004).

Contextual ambidexterity, on the other hand, refers to a set of processes and systems within the organization that facilitate and encourage the organizational units and employees to do contradictory tasks at the same time. It concerns more the role of organization’s people and individuals than the role of organizational structure in achieving ambidexterity. It indicates the ability of each organization’s member to assign his/her working time and job area to both alignment- and adaptability-related activities. In contextual ambidexterity there is no clear instruction or order from the organization to direct employees towards either exploratory or exploitative actions and, instead, each individual takes both of such actions based on his/her judgment and decision in a flexible context(Gibson & Birkinshaw, 2004). Therefore, contextual ambidexterity occurs within each single organizational unit without the need to have a kind of dual, separated structure. Contextual ambidexterity, in other words, depends on the organization context in which individuals work and divide their time between exploratory and exploitative activities. So, we need to distinguish the appropriate context for the ambidexterity to be developed and established within an organizational unit. Gibson and Birkinshaw (2004) use the definition of organizational context developed by Ghoshal and Bartlett (1994) and suggest four contextual attributes that are necessary to establish ambidexterity in an organizational/business unit. These four interdependent characteristics of an ambidextrous context are called as discipline, stretch, support, and trust. Discipline is an attribute that encourages people to achieve what they are supposed to do. Stretch indicates a context in which people are willing to achieve more ambitious goals. Support implies a context in which people are encouraged to help and tolerate each other. Trust is a characteristic that creates a reliable working environment. The first two characteristics are considered as hard elements of organizational context that result in an efficient organization with determined, ambitious goals and the last two attributes are considered as soft elements of organizational context that create and enhance a supportive, cooperative environment. The balanced combination of all these four elements results in a contextual ambidexterity. The interrelationship between these elements and attributes is displayed below in the figure 2.5. The contextual ambidexterity or, in other word, an ambidextrous context, in turn, results in a higher level of organizational performance (Gibson & Birkinshaw, 2004).

![Figure 2.5 Elements and attributes of an ambidextrous context](image)
2.2.4. Senior management behavior

Another issue that helps companies to achieve ambidexterity is the behavior of the senior managers. Their behavior in the company is significant as they have great impact on organizational outcomes especially in high-velocity environments where changes are so rapid and more instability exist in a market (Smith, et al., 1994). In this condition managers have to be involved in right decision making to overcome tensions and ambiguities resulted from ambidexterity. In addition, senior managers in organizations shape individual behaviors (He & Wong, 2004) and facilitate team’s ability for better performance (Simth & Tushman, 2005). Managers should overcome the tensions already mentioned such as how to allocate resources between exploration and exploitation, how to manage conflicts between employees and so on. In doing so; managers can resolve tensions by effective strategies in order to create integrative and synergetic value between exploratory and exploitative activities and to achieve organizational ambidexterity (Jansen, et al., 2008).

How they can be effective is associated with a set of senior managers’ attributes including a clear strategic intent, shared vision, social integration and reward (O’Reilly & Tushman, 2008; Jansen, et al., 2008; Siegel & Hambrick, 2005). By paying attention to these elements as shown in figure 2.6., senior managers can affect organizational ambidexterity. The following lines will demonstrate these factors in detail.

**Figure 2.6 Senior management behavior’s factors in realizing ambidexterity**

2.2.4.1. Clear strategic intent
Senior managers in the companies who want to have long term survival should determine a clear strategic intent in focusing on long term possible layout rather than short term maximization of profit (O’Reilly & Tushman, 2008). As exploration needs
different attention from exploitation (March, 1991) therefore in the absent of an explicit strategy that focus on exploration activities, the company will just focus on short term profitability as a result until it won’t be a clear strategy for the importance of both exploration and exploitation, the short term profitability gets more crucial for the companies and they will put more effort and resources to exploitation activities and neglect exploration activities (O’Reilly & Tushman, 2008). However, ambidexterity will occur when senior managers have a clear and compelling strategic intent which satisfy both agenda in exploration and exploitation activities.

2.2.4.2. Shared vision and values

Senior managers should share a set of goals and values in order to lead the company to common strategic direction as sharing vision and values are associated with a firm’s ability to combine the high level of both exploratory and exploitative activities within a company (Jansen, et al., 2008). Sharing vision through the company decreases the conflict and disagreements and lack of it brings distrust and suspicion within senior managers and throughout the organization (Jansen, et al., 2008). In addition, sharing value and vision provides a common identity and adopts the long term mindset which is important for exploration. So, business units within a company are more likely to collaborate instead of competition (O’Reilly & Tushman, 2008). As a result of this collaboration more opportunities are generated for resource exchange and combination across exploratory and exploitative units. However, divergent beliefs about identity decrease the commitment of employees and increase competition between groups in an organization which result in dislike, distrust and conflict (Voss, et al., 2006). In order to resolve conflicts and unhealthy competition, the vision and the value of the company should share within the organization to create common identity.

2.2.4.3. Social integration

Social integration is different from sharing vision and values. Sharing values is more related to common understanding of collective goal however social integration more refers to affective elements or social forces among employees within organizations in order to highlight the meaning of “group proud”, “team spirit” and “teamwork” (Smith, et al., 1994). Social integration is the way that individuals within a company are linked to others in a group and it reflects attraction to the group, satisfaction with other members of the group and social interaction among the group members (O’Reilly, et al., 1989). Social integration in organizations should not only exist between senior managers but also between employees within organizations because those members that are socially integrated exhibit greater efficiency in task coordination and contribute to the team success (O’Reilly, et al., 1989; Smith, et al., 1994). In addition, evidence strongly indicates that social integration increases internal communication which is more needed in situations of high interdependence as well as increasing negotiation, compromise and collaboration across organizational units (Michel & Hambrick, 1992). Social integration also results in better team communication and better organizational performance (Smith, et al., 1994). However, members that are socially integrated are expected to work harder in order to realize opportunities and synergies for combining exploratory and exploitative activities (Smith, et al., 1994). In addition, social integration is more resulting in reconciling conflicting goals associated with exploratory
and exploitative activities so it contributes to achieve organizational ambidexterity (Jansen, et al., 2008).

2.2.4.4. Reward

Giving rewards to employees is one way to increase the motivation in order to work harder. Besides, finding indicates that giving reward is associated with a firm’s ability to combine high level of exploratory and exploitative activities (Jansen, et al., 2008). Senior managers have a significant role in giving rewards as it is a critical issue. It can result in high motivation and increasing the effort of employees while may bring envy, jealousy and harmful rivalries (Siegel & Hambrick, 2005). In order to conduct better performance and to create synergy between exploratory and exploitative activities, employees need to be motivated and to feel that they are treated fairly especially when there is a task interdependency among employees. In a high-velocity market, environmental uncertainties, instability, discontinuous and rapid changes in competition, technology and demands (Eisenhardt, 1989; Bourgeois & Eisenhardt, 1988) create task interdependency between employees in which more collaborations and coordination among them are needed (Siegel & Hambrick, 2005:260). In that cooperative environment employees share information, negotiate with each other and have frequent mutual adjustments with each other (Siegel & Hambrick, 2005).

In contrast, in moderately-dynamic markets, because of less ambiguity there are fewer changes in environment and less task interdependency exist. In this condition, there is less collaboration and coordination among employees (Siegel & Hambrick, 2005). In order to avoid unhealthy competition and make a cooperative environment in a company especially in the high-velocity market, employees should feel that reward system is fair otherwise they won’t collaborate with each other and this brings disadvantage for the company as the degree of efficient information processing, coordination and cooperation will decrease (Bloom, 1999).

In order to make our lines of argument clear we illustrate the figure 2.7. The figure shows the outcomes of paying fairly and disparities in high-velocity and moderately-dynamic markets. As high task interdependency exists among employees in high-velocity market, pay disparities will result in less exchange information, less coordination and less cooperation (Siegel & Hambrick, 2005) but paying fairly causes the cooperative environment and synergies between exploration and exploitation. However, in moderately-dynamic markets, although paying disparities will result in less collaboration and coordination it has less effect on whole organizations because less task interdependency exists.
By now, we have reviewed and understood the theories concerning organizational ambidexterity and other related concepts. We have also described different options to achieve ambidexterity in organizations. In our literature review we realized that there is a link between organizational ambidexterity and dynamic capabilities. Therefore, we will describe the concept of dynamic capability through reviewing the related literature in following part to explain this connection.
2.3. Dynamic Capability and Organizational Ambidexterity

In this part, we review the literature on resource based view and dynamic capability as two important, interrelated concepts in the area of strategy issues to find out their connection to the concept of organizational ambidexterity. In other words, we basically know that dynamic capabilities help companies achieving ambidexterity and we want to explain this relationship. Dynamic capabilities, in turn, have a strong relationship with companies’ resources that encourages us to consider the resource based in our literature review as well.

The main concern in the field of strategy and its surrounding discussions is competitive advantage and how to achieve it by organizations. However, this concept was not popular long years ago when Michael Porter, for example, developed his well-known 5 forces model in 1979. In Porter’s model, only external environment of the firm was taken into account in order to analyze how to increase profitability and to achieve a good position in the market (Porter, 1979: 138). But later on, the lack of internal analysis of the firm environment caused scholars to bring new perspective into theory in order to complement the Porter’s model. In this regard, Birger Wernerfelt (1984) introduced the concept of Resource Based View (RBV) taking an internal perspective into the firms. Immediately afterwards, Porter brought the concept of competitive advantage to the business world in his book “Competitive Advantage” (Porter, 1985). Later on, the RBV theory was developed by Barney (1991) when he made a framework mentioning firms’ resources should be valuable, rare, inimitable and non-substitutable (VRIN) in order to get a sustainable competitive advantage.

As market environment became more demanding and competition got tougher, business scholars developed new theories to explain the new competitive requirements. As a recently considerable issue, Teece, et al. (1997) introduced the concept of dynamic capability considering both internal and external resources and competences of the firms to explain how to achieve competitive advantage in an extremely changing environment. This concept complemented the RBV theory since the latter couldn’t respond to the requirements of dynamic markets. In addition, as dynamic capabilities view got more attention, some authors started to explore and explain the mechanisms by which firms’ dynamic capabilities should be and are evolved to adapt to environmental and technological changes (Helfat, 2000). Dynamic capability, itself, is a very intangible, abstract concept and should be made visible inside organizations in order to evaluate its contribution to organizational performance. An effective mechanism to observe dynamic capability is its components and organizational processes which will be discussed in another separate section.

The above lines show a chronological development of the concepts of resource based view and dynamic capability. In following sections, the concepts and their relationship to organizational ambidexterity will be clarified in detail.
2.3.1. **Dynamic capabilities: definition**

Dynamic capabilities are the main source of competitive advantages for firms, those companies that can “rapidly integrate, learn, and reconfigure their internal and external resources can adapt to rapid environmental changes and thus enhance or maintain their competitive advantages” (Wu, 2010). However, dynamic capabilities will react differently in various kinds of markets; moderately dynamic markets and high-velocity markets, and the competitive advantage which will be gained through these dynamic capabilities can be temporary or sustainable. The following lines will demonstrate these ideas in details.

Teece et al. (1997:516) define dynamic capability as “the firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments”. They believe that a firm’s dynamic capabilities are affected and shaped by its processes, assets and evolutionary path. They suggest three sets of organizational and managerial processes including coordination/integration, learning, and reconfiguration as core elements of dynamic capabilities. Organizational processes and their roles in organization’s dynamic capabilities will be clarified in another section later on. However, some organizational assets are identified by them as critical to determine the competitive advantage of the firm including technological assets, complementary assets, financial assets, reputational assets, structural assets, institutional assets, market assets, and organizational boundaries.

Eisenhardt and Martin (2000) define dynamic capabilities as a set of organizational routines in shape of processes that cause the company to integrate, reconfigure, gain and release the organizational resources. They identify and point out some of such processes like product development, resource allocation, alliance and acquisition and so on that, in our opinion, is a helpful way to clarify the concept of dynamic capability in an empirical context. In their study, they have distinguished a more up to date, redefined view on the concept of dynamic capability from the traditional perspective. However, they claim that dynamic capabilities are not a source of sustainable competitive advantage since they carry some common features across different firms. Another important part of Eisenhardt and Martin (2000) that makes it different from similar literature is their distinguishing of dynamic capabilities in different markets. Their view about market dynamism will be described in another section.

Zollo & Winter (2002) define dynamic capabilities as “routinized activities directed to the development and adaptation of operating routines”. They introduce three learning mechanisms by which dynamic capabilities are evolved and cause the evolution of operating routines. These learning mechanisms are experience accumulation, knowledge codification, and knowledge articulation. In other words, dynamic capabilities are systematic processes and tasks that help an organization modifying its routines and competencies. Zollo & Winter (2002) also refer to systematic learning mechanisms as second-level dynamic capabilities. From this perspective, we can distinguish dynamic capabilities as “routines to learn routines” (Eisenhardt and Martin, 2000).

Winter (2003) relates the concept of organizational capability to the concept of organizational routines defining it as a high level routine that gives the management the
capacity of better decision making. He defines different levels for dynamic capabilities and calls the ordinary capabilities that keep an organization’s status quo as zero-level capabilities. However, the first-level capabilities are those who cause change in organization’s product, customers, and markets. In other words, he connects the dynamic capability with the concept of organizational change but claims that not every kind of change needs dynamic capability to happen. According to Winter (2003), dynamic capabilities enhance the pattern of change in a routine way while changes without dynamic capability sound more like a response to unexpected environmental changes. He calls such changes ad-hoc problem solving. He concludes that dynamic capabilities do not necessarily result in competitive advantage and companies decide whether to invest on higher level capabilities based on the cost and benefit they hit through such investment.

Teece (2007) defines dynamic capabilities as difficult-to-replicate capabilities based on which a company can achieve sustainable competitive advantage in highly changing environments. He has developed a detailed framework to describe dynamic capability and its foundations categorized under three so-called labels of sensing, seizing, and reconfiguring. We will discuss and review this framework in the following section. There is a link between these three foundations with those three ones proposed by Teece et al. (1997) in a way that coordination/integration, learning, and reconfiguration processes support sensing, seizing, and reconfiguration framework. In addition, Teece (2007) distinguishes dynamic capability from resource-based view of the firm in a way that resources and competences are mechanisms by which a company makes profitability while dynamic capabilities are innovative enablers that guarantee the sustainable profitability of the firm.

From above discussions, we can observe that there is no consensus among researchers to define dynamic capabilities and their role on achieving competitive advantage by firms. Some researchers have supposed that dynamic capabilities are crucial for companies to achieve sustainable competitive advantage while others say they do not necessarily result in competitive advantage. Some authors have tried to give practical implications to dynamic capabilities by dividing them to different components and connecting them to organizational processes but some others left the concept abstract and intangible. In this thesis, we base our analysis on framework developed by Teece (2007) to connect the concept of dynamic capabilities with organizational ambidexterity because we find this framework more clearly relevant to exploration and exploitation concepts.

### 2.3.2. Components of dynamic capabilities: Sensing, Seizing, and Reconfiguring

In this section, we will scrutinize dynamic capabilities to show the mechanisms and processes by which dynamic capabilities are deployed and developed at the company (Helfat, et al., 2007). We will start with organizational processes and explain them briefly and later discuss about the components of dynamic capabilities in details.
Organizational processes are defined as routines through which organizational activities are implemented. Organizational processes include coordination/integration, learning, and reconfiguration (Teece, et al., 1997). Coordination/integration implies all the activities a firm exercises to handle its current position efficiently and effectively both inside and outside the organization. Learning involves all processes that cause the firm to learn from its recurring activities inside the firm and from its external collaboration with other companies and reconfigure related to respond fast to rapid environmental changes. These processes support dynamic capability’s component; sense, seize and reconfigure (Teece, 2007). We think that distinguishing these components help us discovering the bridge between dynamic capabilities and organizational ambidexterity. In doing so, we mainly consider the framework developed by Teece (2007) who has made a comprehensive study of the literature on the phenomenon and succeeded to show accurately the elements and mechanisms of dynamic capability in detail.

Teece divides dynamic capabilities into three “orchestration” capacities (Teece, 2007: 1319): the capacity “to sense and shape opportunities and threats”, the capacity “to seize opportunities”, and the capacity “to maintain competitiveness through enhancing, combining, protecting, and when necessary, reconfiguring the intangible and tangible assets of the enterprise”. Teece (2007:1341) believes that the company needs to simultaneously develop and deploy these three elements in order to achieve competitive advantage.

He defines sensing and shaping new opportunities as “scanning, creation, learning, and interpretive activity” to explore new technologies and markets through investment on R&D activities with focus on research sides (Teece, 2007:1322). He also identifies four sets of processes that enhance the ability of the firm to sense, filter, shape and calibrate the opportunities that are appeared in business environment. Organizations should manage and direct their R&D processes to use their individuals’ skills and knowledge for research activities. In fact, sensing opportunities is based not only on individuals’ cognitive and creative abilities but also on the ability of the organization to employ its knowledge capacities. While R&D processes are mainly based on the organization’s available knowledge and technology, they are not enough especially in turbulent environments to distinguish and identify opportunities. As a result, organizations should also entail processes to get informed about the new science and technologies beyond their boundaries. In addition, they should have processes to establish close cooperation with their customers and suppliers to identify their technological innovations and their changing needs in order to distinguish possible opportunities to develop their business.

Seizing opportunities is defined as the ability of the firm to select and invest on appropriate products, markets, and technologies that have been identified through sensing activities. Seizing, therefore, includes investment decisions and strategic choices on issues like development and commercialization activities, improvement of technological competences and complementary assets (Teece, 2007:1326). The skills and tasks required to seize the opportunities are distinguished as “selecting product architectures and business models”, “selecting enterprise boundaries”, “managing complements and ‘platforms’”, and “avoiding bias, delusion, deception, and hubris” (Teece, 2007). Companies should select the right product architectures and business models in order to capture value. In doing so, besides defining the structure of the value chain, they choose the right technologies, market, customers and etc. Companies should
pay attention to choose what technologies and features should be embedded in products and services to meet their customer’s need. Another issue regarding seizing is to select the enterprise boundaries. It means setting the right boundaries to give more benefit to the sponsor of the innovation rather than to the imitators. In doing so companies can use legal protections and also paying attention to the nature of complementary assets that an innovating enterprise possessed. They should also consider the “relative positioning of innovator and potential imitators with respect to complementary assets” (Teece, 2007:1331). In addition, they should select the right companies for alliances to gain advantage of it. Firms should also pay attention to manage complements and platforms in a way to distribute capabilities between platform manager and complement. Companies could outsource as well in order to gain most of the benefits of scale without engaging in manufacturing. However, in order to avoiding bias, delusion, deception, and hubris management team need to create an environment in which employees feel free to say their opinion and also to give reward for problem-solving ideas. In addition, management should make communicating goals, values as well as motivating employees and make them loyal and commitment (Teece, 2007).

Managing threats and reconfiguration as the third element of dynamic capability framework indicates the ability of the firm to recombine and reshape the organizational assets and structure to respond to changes in market and technologies as firm grows. This is a key ability for the company to sustain a profitable growth. These abilities are much related to the leadership skills of the firm’s top management. The other implications for reconfiguration activities may involve redesigning the business model, improving hierarchies and routines, realignment of organizational assets thorough mergers, acquisitions, and divestments. All in all, these tasks and abilities require some prerequisites to be achieved including decentralization and near decomposability, managing co-specialization, learning, knowledge management, and corporate governance (Teece, 2007). Decentralization is usually obtained by multidivisional structure where organizational units are independent from each other in their decision making processes. This feature of organizational hierarchy is especially critical in fast changing environments helping companies to be more responsive. Decentralization together with integration creates the concept of near decomposability. Managing co-specialization means making organizational strategies, structure, and processes fit with each other. Companies should also be able to achieve and develop knowledge and learning from inside and outside the firm and to employ and transfer them within the company. Corporate governance implies the mechanisms that company uses to protect its know-how and to monitor transferring the knowledge and technology in such external collaboration as outsourcing. It also involves the mechanisms to manage and align the incentive systems at the company.

### 2.3.3. Dynamic capabilities and market dynamism

Dynamic capabilities are, as the name implies, mainly important in dynamic environments. However, depending on the arrangement of the environment the form of the dynamic capabilities varies as well. Two patterns can be clearly distinguished here: dynamic capabilities in moderately-dynamic markets as well as in high-velocity markets (Eisenhardt and Martin, 2000: 1115).
A moderately-dynamic market has a stable industry structure with defined boundaries, identifiable players and clear business models. Change occurs here in a linear and thus predictable way. In a moderately-dynamic market the outcome of dynamic capabilities is predictable and relies heavily on existing knowledge (Eisenhardt and Martin, 2000) and the theme here is “learning before doing” (Teece, et al., 1997: 525). However, “exploitation is based on the efficient use of existing skills and it produces reliable results.” (March and Weil, 2005: 29). In addition, Soosay and Hyland (2008) argue that exploitation more occurs through existing sources and knowledge. As a result, we could say that dynamic capabilities in moderately dynamic environments represent a company’s exploitation or at least exploitation orientation.

In contrast, high-velocity market is characterized by an ambiguous industry structure, blurred boundaries, ambiguous and shifting players and fluid business models where change happens nonlinear and are unpredictable (Eisenhardt and Martin (2000). In this condition, companies more rely on newly created knowledge in order to be able to stay flexible and respond to changing market conditions as fast as possible. Because of the unpredictable outcome, the use of dynamic capabilities is an iterative process that follows the theme of “learning by doing” (Eisenhardt and Martin, 2000: 1115; Teece, et al., 1997: 525). As a result, dynamic capabilities in high-velocity markets can be understood as a company’s exploration activities.

To conclude, we could say that dynamic capabilities react differently in various kinds of markets. They can reflect a company’s exploitation activities if the market is moderately-dynamic or they can reflect company’s exploration activities if they are in high-velocity markets.

2.3.4. The role of dynamic capability in achieving ambidexterity

We can seemingly find an interrelationship between dynamic capability and organizational ambidexterity in literature. The interconnection between these two seemingly independent concepts can be observed as below. Dynamic capabilities, to a great extent, is involved in functions such as recognizing market developments, (re)directing resources and also reshaping organizational structures and systems “so that they create and address technological opportunities while staying in alignment with customer needs” (Teece, 2007: 1347). However, dynamic capability through its components can reflect exploratory and exploitative activities. Sensing and shaping new opportunities concern a set of processes for scanning, creation, learning, and interpretive activities. These processes can be mentioned such as investment in R&D with focus on research sides in order to use individuals’ skills and knowledge for research activities (Teece, 2007). These result in long-term approach and help companies enhancing their exploratory activities. Sensing opportunities strongly needs the leadership skills of senior managers to facilitate the organizational learning and the transfer of knowledge within and beyond organizational boundaries (O’Reilly & Tushman, 2008). Some of attributes of senior team behavior were already mentioned as an option for realizing ambidexterity.
Seizing opportunities is related to the right strategic decisions to ensure about the proper organizational alignments. As already mentioned, seizing opportunities occurs through selecting the right product architectures and business models in order to capture value, embedding right technologies and features in products and services that sensed before. It also concerns managing platforms and complements in order to distribute capabilities between them. However, seizing is important because without that firms may discover opportunities but not able to benefit from them. As a result, seizing opportunities require the proper organizational alignments that, in turn, call for senior managers’ skills to integrate the organizational units through shared visions and strategies, and to allocate resources appropriately among different activities (O’Reilly & Tushman, 2008).

In our understanding, seizing opportunities reflect more exploitative activities. When companies sense opportunities and seize them, in order to have long term success they need to reconfigure assets and organizational structures as market and technologies are changing. Reconfiguration consists of a set of processes that enable the company to consider both short-term efficiency and long-term flexibility to have both exploitation and exploration. Depending on rapid or incremental changes, reconfiguration may be different. When changes are incremental, reconfiguration may proceed slowly through the temporal sequencing in a way that shifting in structure, processes, people and etc is gradually or sequentially. However, in rapid change contexts, reconfiguration is more likely to be done in parallel status (O’Reilly & Tushman, 2008). We already explained temporal sequencing vs. parallel as an option for achieving ambidexterity. These arguments indicate that triple components of dynamic capability contribute the firm to adapt with environmental changes in shape of exploration, to align with organizational capabilities in shape of exploitation, and to be able to respond to both short- and long-term changes in shape of efficiency and flexibility. When these components come together, they cause the organization realizing ambidexterity and, as already mentioned, result in sustainable competitive advantage.

2.4. Summary of Theoretical Framework

In this part, we want to summarize theories that are related to organizational ambidexterity. In doing so, we illustrate a concept map as shown in figure 2.8. The figure shows that market dynamism can be in a shape of either high-velocity or moderately-dynamic and it affects on dynamic capability. Dynamic capability is a mechanism in which organization’s resources are integrated, built and reconfigured and it is developed and employed by organizational processes. However, organizational processes support and help dynamic capability’s components; sense, seize and reconfigure. Sensing opportunities require more exploration (adaptability) whereas seizing require more exploitation (alignment) and reconfiguration needs both. Dynamic capability in high-velocity market more contributes to exploratory activities whereas in moderately-dynamic markets they highlight more exploitative activities. From exploration, adaptability, organic form, effectiveness and also exploitation, alignment, mechanistic form and efficiency companies can focus on both short-term profitability and be flexible towards rapid technological and environmental changes. This calls as ambidexterity. Organizational ambidexterity can be achieved by external vs. internal resources, sequential or/and parallel balancing between exploration and exploitation, having both structural and contextual ambidexterity and effective behavior of senior management. The ambidextrous organizations can resolve the paradoxes and gain sustainable competitive advantage.
Figure 2.8 Theoretical Concept Map

Market Dynamism

High-Velocity Market

Moderately-Dynamic Market

Dynamic Capability

Developed and Deployed by

Organizational Processes

Support organizations to

Sense

Seize

Reconfigure

Requires more

Requires more

Requires

Exploration (Adaptability)

Exploitation (Alignment)

Result in

Organizational Ambidexterity

Achieved through

Internal vs. External

Sequential vs. Parallel

Structural vs. Contextual

Senior Management Behavior

Result in

Resolution of Organizational Paradoxes

Result in

Sustainable Competitive Advantage
Research Methodology

The objective of this chapter is to present the approach in our studies and the methods we have used when conducting our research to make sure that the research results are reliable.
3. Research Methodology

Why research methodology is important? Why should we be aware of the methodological approach in our research? Which methodological approach should we choose to follow among many approaches and methods? Who do we address in our research? Who shall read, use and benefit from our research and its results? Why and how the readers should trust and rely on our research results? All in all, how valid and reliable is our research?

In this chapter we want to answer these questions and show how we are doing our master’s thesis. In this regard, we figure out the content of this chapter based on the framework followed by Bryman and Bell (2007).

A business research is influenced by some factors according to Bryman and Bell (2007). We take these factors into consideration and try to show how they apply to our master’s thesis in this chapter.

3.1. Research paradigm

The paradigm in which a research is conducted influences the research assumptions, strategy and design. A scientific research can be done within two broad paradigms including epistemological and ontological paradigms. Burrell and Morgan (1979), based on these two set of assumption and perspective, have developed four paradigms in business research that might be used by business researchers in their study of organizations. These paradigms are functionalist, interpretative, radical humanist, and radical structuralist (Bryman and Bell, 2007).

3.2. Research strategy

Two general kinds of research strategies are distinguished and employed by researchers in different fields of studies; that are quantitative and qualitative research. The distinction between these two types of research is not always easy but normally a quantitative research is defined as one that uses quantitative, statistical methods to analyze the data collected while a qualitative research is one that does not use the quantitative techniques in analyzing its data (Bryman and Bell, 2007). Our master thesis, according to this distinction, can be considered as a qualitative research. We will gather our data through some interviews at two companies and will analyze them using our interpretation of the interviews’ transcription. We will not use any numerical data and, therefore, we will not employ any quantitative, statistical tool to analyze them. Following a specific research strategy causes a researcher to accept a specific framework in which he/she conducts the research. In this regard, Bryman and Bell (2007) distinguish a qualitative research as one with an inductive approach that is based on an interpretive and constructionist orientation.
3.3. Research approach

There are two different approaches in using theory to conduct a research: induction and deduction. In deductive approach, the researcher develops a set of hypotheses based on existing theories and tests them using a set of empirical studies. This kind of research results in confirmation or rejection of the hypotheses. Inductive approach, in contrast, starts from empirical studies and ends up with some theories generalizing the observation findings (Bryman and Bell, 2007). In defining the relationship between theory and research, Ghauri and Gronhaug (2005) distinguish two different approaches as well: one approach called as “theory before research” and another called as “research before theory”. The former is associated with deductive and the latter is related to inductive research approach. These two approaches are sometimes interrelated and cannot exclusively be separated from each other.

Our thesis is mainly based on a deductive approach even though it doesn’t entail any hypotheses. However, we will use the theories relevant to the ambidexterity that already existed in the literature and will do some empirical test of these theories in two Swedish companies. Instead of hypotheses, we will base our empirical study upon a set of propositions that we have developed out of theoretical studies to show options and conditions under which ambidexterity can be achieved. Therefore, we are going to examine and describe different options for realizing ambidexterity at two Swedish companies that are working in two contrasting environments.

3.4. Research design

After defining the research strategy and approach, it is normally expected to figure out a research design as a framework in which data are collected and analyzed. Bryman and Bell (2007) have distinguished five different types of research design including experimental, cross-sectional, longitudinal, case study, and comparative design. Our master thesis can be considered more as a comparative research in which we examine the identified options for realizing ambidexterity in two different companies that are, somewhat, in contrast with each other. One is considered as an exploitative company working in a quite moderately-dynamic market and the other can be defined as an exploratory company acting in a high velocity, knowledge-intensive industry. Comparing these two opposite cases help us examining the options for realizing the ambidexterity in different market conditions. Then, we will be able to conclude that a definite option can suit a specific company based on the type of the industry and the degree of market velocity in which the company is active. The reason that we decided to do a comparative study is to examine the ambidextrous options in both high velocity and low velocity markets that are represented by two selected companies; BT as a representative of moderately-dynamic and Sectra as a representative of high-velocity markets.
3.5. **Data collection methods (research method)**

To reach data required for the analysis of our propositions, we made some interviews with relevant, key persons at two Swedish companies; at Sectra we had two interviews, one with vice-president marketing at Medical business unit and one with president of Secure Communication business unit. In addition, at BT we had two interviews with vice-president product development and one interview with a project manager from TMHE corporate level. These interviews were shaped in a semi-structured way allowing both interviewer and interviewees to have an open discussion. The interviewees are among senior and middle managers at business level of two Swedish companies BT and Sectra. One day prior to the interview meeting, a semi-structured questionnaire including a set of open questions for discussion was sent to the interviewee to make him/her prepared for the interview (see appendix I). The interviews were recorded by permission of the interviewee and afterwards their transcripts were transferred down on the paper.

3.6. **Research reliability and validity**

We should make sure that the research we are conducting and its results are scientifically consistent. In evaluation of the research process and result, two criteria are normally taken into consideration; that is reliability and validity. Reliability refers to whether the results of the research can be employed by other researchers in other cases; in other words, the research findings are repeatable. Validity, on the other hand, indicates the truthfulness of research outcomes (Bryman and Bell, 2007). However, these criteria are more applicable to quantitative researches. Since our thesis is considered as a qualitative research, we have to take some other criteria to evaluate its consistency. Lincoln and Guba (1985) call this feature as research trustworthiness when it applies to a qualitative research. Trustworthiness, in turn, can be measured from four perspectives including credibility, transferability, dependability, and confirmability. Our research is designed and conducted in a way that can be generalized to other similar contexts meaning it is transferable, and its findings will be the same if it will be done at other times meaning it is dependable. However, since it is an interpretive research, its findings and outcomes are highly based on the investigators’ values and interpretation of the examined cases. In other words, it may not be considered as a highly confirmable research. In addition, the limitation of time and access to people at the companies cause researchers not to have a deep, comprehensive study of the cases that, in turn, may influence the research results in a negative way.
Empirical part

The objective of this chapter is to present the practical data and information that we got during our studies. We interviewed two companies; BT and SECTRA. The chapter will start with the description of the companies and continue by adding information that we got during the interview. The data in this part comes from two individual interviews with SECTRA and three individual interviews with BT.
4. Empirical Part

4.1. BT PRODUCTS AB (BT)

This part is involving in presentation of our investigation at the Swedish company BT products AB that will be referred to as BT in this thesis. The data in this part is based on the interview with one of the BT’s vice presidents and also a TMHE’s project manager besides the information we got from BT and Toyota’s web pages.

4.1.1. Description of the company

BT has been founded in 1946 and established in Mjölby in 1952 where it is an operational part within the material handling equipment sector that provides trucks for internal material handling and related services. BT mainly has a functional structure within which some projects are implemented in. BT is part of Toyota Material Handling Group (TMHG). (TMHG) is the materials handling division of Toyota Industry Corporation (TICO), the world leader in materials handling. Four geographical business areas are under (TMHG); Toyota Material Handling Europe (TMHE), Toyota Material Handling North America (TMHNA), Toyota Material Handling Japan (TMHJ), and Toyota Material Handling International (TMHI).

Toyota Material Handling Europe (TMHE) is the European regional organization of (TMHG) with offices in Brussels, Mjölby and Linköping. TMHE supplies European market by their three main factories; CESAB in Bologna, BT products AB in Mjölby and Toyota Industry Equipment S.A. (TIESA) in Ancenis. They produce products under the brand of CESAB, BT and Toyota. Toyota Material Handling North America (TMHNA) has five manufacturing plants. Independent dealers are handling the sales for the products under the brand of Toyota, Raymond and Lift-Rite. Toyota Material Handling Japan (TMHJ) is headquartered in Nagoya and produce counterbalance trucks in Takahama. Sales are mainly handled by independent dealers. Toyota Material Handling International (TMHI) is responsible for sales to countries outside Europe, North America and Japan. They sell to more than 40 countries, partly through the Mjölby office, but also via four regional offices that are located in China, Malaysia, United Arab Emirates and Brazil. TMHI sales are handled by sales companies and dealers (BT webpage). In order to make clear how these geographical businesses are located as a part of TICO, we illustrate figure 4.1. In this figure the position of each business region is shown as well as functions under BT such as product development, manufacturing, purchase, human resource (HR), finance, information system (IS), information technology (IT) and special product.
As mentioned before, BT is a part of (TMHE) under (TMHG). They produce warehouse trucks in Mjölby factory. According to former TMHE Chairman, Per Zaunders\textsuperscript{1}, values that were always be central to BT is quality and service, reliability, commitment and improvement. These core values are crucial for BT and they reflect these throughout the organization. BT is proud of its team effort and with the team they develop BT till now.

In order to stay competitive in the changing market BT realized they should give their customers value-added in the form of a new range of products and services. The vision of BT is not only to raise efficiency in order to improve productivity but also to make their brands strong in the global market and it shares throughout BT. (BT 60 years report). Toyota is using Kaizen approach, BT also follows the same approach and it is clearly defined in BT. Kaizen or continuous improvement highlights that no process can be completely perfect and there is always room for improvement.

4.1.1.1. History

As mentioned earlier, BT has been founded in 1946 with the idea of selling equipment to the construction and transportation industries. In the beginning BT was just selling products from other manufacturer but soon it started to develop its own products. In 1948 it was a breakthrough for the BT when the revolutionary pallet-measuring 800*1200 mm was introduced and later on those hand pallet trucks became standard in much of the Europe. However, this results in higher demand for BT products. In 1954 BT started to open service canters around Sweden focus on service and quality as BT realized the need for efficient services. Collaboration with Saab to produce aircraft hydraulics gave more reputation to BT during 1960s as the aircraft manufacturer proof

\textsuperscript{1} Per Zaunders was the former TMHE Chairman, who retired on 31 March 2008 after nearly two decades with the BT and Toyota organisations. In 1991, Mr Zaunders joined BT Industries, becoming the company’s Chief Financial Officer and Executive Vice President. In 2002, Mr Zaunders became President and Chief Executive of BT Industries. He served as Chairman of Toyota Material Handling Europe (TMHE) from January 2006 until his retirement on 31 March 2008.
the high level quality of BT. In 1968 BT factory opens in Mjölby, Sweden. Before 1970 BT had collaboration with Clark, British company, for having counterbalanced trucks in its products range. The collaboration was not successful and BT quit it later on and bought CESAB instead. In 1977 the first automated trucks was introduced to the market. BT started to get more global by expanding its sale and services in several European countries such as Benelux, Denmark, UK and Germany and later on to France and North America by establishing sales companies in US and Canada. BT passed 1 billion SEK in sales in 1982 which was very good achievement for the company. During 1990s BT’s share listed in Stockholm stock exchange. In 1993 BT introduced the Tilting cab trucks which were the first highly ergonomic trucks. BT acquired Raymond Corporation in 1997 in order to present better in American market. In 1999 BT acquired CESAB, the Italian company. This helped BT to include counterbalanced trucks to their product range. At the end of the 90s BT was represented in over 70 countries. In 2000 BT industries were bought by Toyota Industry Corporation (TICO) of Japan and the BT share was delisted from the Stockholm Stock exchange. Together they are market leaders with over 20 percent of the global industry truck market because BT is the world’s largest manufacturer of warehouse trucks and Toyota is the world’s largest manufacturer of counterbalanced trucks and they want to maximize synergies between the TOYOTA brand and the BT brand. In 2007 BT introduced the new technology; the voice ordering system in order to increase the productivity and to facilitate loading/unloading materials (BT 60 years report, TICO annual report, TMHE home page). A view of the company’s history can be seen in figure 4.2.

![Figure 4.2 BT’s historical events](image)

### 4.1.1.2. BT products and Market

BT offers different range of products for warehouse trucks such as different models in Hand pallet trucks, Pallet trucks, Stackers, Reach trucks, Order Picking Trucks, Tow trucks, Very Narrow Aisle trucks, Semi automatic trucks, Forklifts Diesel or Gas and new forklifts electrics (BT website). The list of BT’s warehouse trucks with their different models is presented in appendix II. BT products are not just selling to the customers but also renting to them. More than 50% of BT’s products are rented to customers through long term rental or short term rental. Most of the customers prefer
long term rental contract. For instance, they rent products for three years with full services and maintenance. BT offers the proposal to their customers few months before finishing the contract in order to keep them. BT asks them if they want to change the old truck with the new one just by signing another three years contract. Most of the customers would like to replace the trucks so they accept the proposal. However, this also has an advantage for BT. They can keep their customers as well as using old trucks for short term rental contracts. Those Companies that have peak in their productions in some months during a year such as Christmas would like to sign the short term contract with getting old trucks because it is cheaper than renting new trucks. As BT is a part of the Toyota Material Handling Europe (TMHE), the market that they serve is Europe.

4.1.1.3. Customers
BT pays lots of attention to their customers. They offer different warehouse trucks with lots of improvement in each of their products in order to have satisfied customers. Before 1970, BT had collaboration with Clark, British company, for supplying their customers. The reason behind the collaboration was that BT wanted to have counterbalanced trucks in their products because they know customers want one stock shop. For instance, if they want to buy forklift trucks from one company they also would like to buy counterbalanced trucks from that company. The collaboration was not successful so BT quit that because

“Clark was not the strong company and they had some problems with their products so our customers were not happy. Then we decided to buy CESAB.”

In addition, to have more satisfied customers, BT has the special function in the organization which calls as special product unit and they produce customer’s orders such as special length of the fork, some special wheels and etc. In doing so, BT offers modification cost and the lead time to the customers. However, it is quite common when BT develops one product according to the customers’ orders, it will become a bigger product in the future. However, BT was doing modifications according customer’s requirements before as well but maybe in a less extent.

But now we have special product function as a separate unit in order to do adaption to customer’s order.”

BT knows what customers want regarding the products.

“Customers want the better ergonomic, better performance, low cost. As a result we try to have these improvements in our products.”

BT distinguished some customers as bigger ones, and they are more interested to allocate their resources to do more development for them. Those customers that buy more products or they are potential to buy more later, such as large distribution companies, consider as big customers for BT. As an example:

“IKEA is a big customer for us. It has many branches everywhere so when they want some modifications we are much keener to allocate resources to do that rather than that customers who buy one product.”
BT also offer low price to big customers in order to keep them. In addition, BT responding to the customers by not just offering different range of warehouse trucks but also by further quality improvement. They listen to the customer’s voice in order to eliminate problems for their customers (TICO report 2009 & TICO annual report 2007). However, BT built a global network for sales and after-sales service to better serve its customers. Besides BT offers its customers a regular servicing, they offer recommendations for servicing and repairs appropriate to the operating situation, and safety training seminars. BT helps its customers to ensure a safe, efficient and well-organized workplace and support them to get the benefit of using BT’s products such as simultaneous cost reductions and efficiency improvements (TICO Social and Environment report 2007).

4.1.2. Breakthrough points

In 1949 the revolutionary pallet-measuring 800*1200 mm was introduced, which together with the hand pallet truck became BT’s breakthrough. However, the pallet became the standard in much of Europe and demand for BT products grew steadily.

“To be successful for moving machines we need to have standard pallets. Standard measuring pallet 800*1200 started to produce by initiative from BT and it was a big step in handling goods in Europe and still it is if you compare with Japan and USA, there is no standardized pallets so that standardize pallets have a big influence on industry.”

Another big change for BT consider in 1977 when they introduced the first automated trucks to the market.

“When we started 60 years ago (1949), first it was hand pallet trucks then later on it was the automat trucks in the market. That one was a big technological change.”

In 1993, BT launched the first unique tilting cab trucks. These trucks were introduced as the first ergonomic trucks. They cause more comfort for drivers as they reduce neck bending. And also they give an excellent visibility in order to have fast and safe handling at high heights. Later on in 2007, BT introduced Voice ordering system by using new technologies and knowledge.

“We developed the new voice system. Drivers will get information on their headset and order to the trucks. This system increases productivity very much. We developed trucks that move without drivers.”
4.1.3. Managing the value chain

In the production department BT follows the certain defined work sheet for responsibilities. For instance, BT has standardized work sheet to define as clear as possible in welding, assembling and painting to increase the efficiency. BT produces more efficient products such as using some supporting wheels in order to keep balanced for heavy products. However in other markets companies use trucks that are bigger because they have the heavy counter weight instead of wheels in order to keep balance so those trucks are bigger and more expensive and less efficient.

BT realized the importance of giving services to customers. As a result, in 1954, BT started to open service centers around Sweden with focus on service and quality and later on opened more service centers in other countries.

4.1.4. Research and Development activities

BT has the same approach of Toyota, Kaizen. They have the continuous improvement in their products. BT does a lot regarding product development. They bring more safety and more ergonomics products. Besides that they pay attention to reduce cost of the new products and increase the quality of them. However, BT does not have any research departments. They have lots of improvement in their products to serve their customers better.

“We have no major research department we are just following what is happening in the market so maybe it is a boring industry because it is not more revolution it is more evolution, it is more small improvement in ergonomics, consumption and in different areas. We are in a mature market.”

BT won’t wait until customers complain about some products. BT knows its products and its problems so when they see there is something wrong with the products, they will start to develop it in order to decrease the problems. Some examples regarding the improvement that BT had in some products can be stated as below:

BT did some ergonomics for some kinds of trucks that has long pipe (10m) and those pipes will go together. Before that when the pipes want to go together it caused shock sound and also shock for a driver but now BT did some development in order to do very smooth transition and decrease the shock for drivers. Another improvement refers to develop a system to enter the pine code instead of switch on the trucks with the key. So every driver has the different pine code and the product is adapted to that driver, for example less skilled drivers need less speed and so on. BT also developed Levio powered pallet truck which is designed for safety, durability and ease of operation in loading and unloading. Recently in stacker products, BT introduced Ixion SPE200D stacker. The product is a versatile high speed stacking truck and it is ideal for loading/unloading vehicles. BT Ixion SPE200D stacker developed with a double stacking capacity which provides excellent stability (BT webpage, TICO report 2009). However BT pays attention to follow some guideline and checklists in order to decrease faults in product development department. Guideline shows how to do the certain type
of development work and check list is more like for instance, before releasing products doing some kinds of activities, some tests and etc.

4.1.5. Resources

BT uses internal resources as well as external resources. Regarding external resources, they use consultancies especially for acquisitions. BT acquired Raymond Corporation, a U.S leader in material handling in 1997. It helped BT to present better in the American market because BT was presenting very weak there. In addition, BT bought CESAB in 1999 not just to be strong in Italian market but mainly to have counterbalanced trucks to sell to the customer because most customers want one stock shopping. They want if they buy forklift trucks they can also buy counterbalanced trucks from that company as well. In order to grow more, BT outsources Machining. Before that BT was doing lots of Machining and that was the big part of Mjölby factory but then they decide to outsource machining, because Mjölby is not big enough for doing that and they did not have enough facilities for that. As a result, in order to grow BT decreases the adding value of machining in-house and outsource it to European countries, Asia and china.

Regarding allocating resources BT won’t allocate all the resources to one specific project or specific activity in order to get sure that one activity is done and later on allocate resources for another activity. However it is more like to use resources not only for routine works but also for product development projects at the same time. In product development BT continuously has different projects going on and they need resources for them and they use resources from inside and outside the company. But it should not ignore that sometimes BT faces with lack of resources especially when there are many projects are running at the same time. In this situation, managers cooperate in order to exchange resources between each other. In addition, BT allocates their resources according the importance of the projects and BT would like to allocate more resources for the bigger customers such as IKEA.

“We allocate resources for bigger customers those that buy more and the number of products that they potentially will buy and when they want some modifications we are much keener to allocate resources to do that rather than that customers who buy one product.”

4.1.6. Employees

Employee’s daily work is mainly done in the functions and their tasks are not dependant on each other but when BT wants to do projects some of employees will involve in project teams as well. In product development, BT has different projects going on at the same time but one person can at the same time involve in product development project as well as in other functions such as manufacturing, purchase and etc. However, BT assigns very knowledgeable employees for doing product development tasks. BT considers the role of employees a lot in the organization. Many employees can participate and give suggestion for production and product developments. For instance,
give proposal for improvement of products and reducing the cost. But employees mainly just take a part in decisions making in the low level. The big strategic decisions such as going to the new market and etc are made in TICO.

BT rewards its employees. The reward is just given to those employees that developed a new ideas regarding new patent or suggestion of how to reduce the cost. BT has patent review meetings in product development departments and they encourage their employees to apply for patent. If one employee has an idea and BT thinks they are able to do that, then that employee will get reward then if BT achieves the patent, the employee will receive the second reward and when his/her patent achieves in another region or country he/she will get the third reward. In addition, as mentioned before, BT will also reward employees for improvement proposal. For instance, if someone can make a proposal that reduce the cost of a product or the cost of producing of that product, then BT will calculate the gain for the one year and that person will get the half of it and the other half is for BT.

BT follows the culture of Toyota Industry Corporation; not personalize the problems.

“We try to avoid blaming the employees if they do some mistakes. We like people to bring their problems and find the way to solve it so it is perfectly ok to bring the problem to the table otherwise you cannot improve.”

So after realizing the problems, BT tries to find a solution for that in order not to happen again.

“We seriously work with solving problems.”

4.2. SECTRA AB

This part includes the presentation of our investigations at Sectra group that will be referred to as Sectra in this thesis. The data in this part is based on our interview with two managers in Sectra; one representing the Medical System business unit and the other representing the Communication System business unit in addition to information we got from Sectra’s web pages and reports.

4.2.1. Description of the company

Sectra group consisting of two business units conduct development and sales of cutting edge solutions in expanding niche segments. Sectra completed its first consulting project in the late 1970s. Today, the company’s products are used by customers in 50 countries and the Sectra brand stands for world-leading products that make healthcare more efficient and protect valuable information. Sectra has a strong collaboration with Linköping University. Current operations include medical systems and secure communication systems. The company’s products are used by customers in some 50 countries and sales are conducted directly by Sectra as well as through regional and local partners. Sectra has around 600 employees and offices in twelve countries. The
first office outside Sweden was opened in Norway in 1995. The most recent was opened in Japan in 2008. Sectra is headquartered in Linköping, Sweden, and has its roots in research operations at Linköping University. The Sectra share is listed on the OMX Nordic exchange in Stockholm since 1999. The Sectra’s net sales of fiscal year 2008/2009 have been SEK 863 million.

Sectra has two business units so called segments including Medical Systems and Secure Communication Systems. Medical Systems focus on and deliver imaging and IT solutions in medical industries while Secure Communication Systems work on delivering and improving security solutions for defense and security authorities. The contribution of each of these segments to the group’s net sales is shown in figure 4.3.

![Net sales by segment](Figure 4.3 Sectra’s net sales by segments)

Source: Sectra’s webpage

4.2.1.1. **History**

To follow the company’s development trend and to see its breakthroughs we indicate some critical events in the history of the company as follows.

- **1978: Sectra is founded**
  
  Sectra’s history dates back to 1978, when a group of researchers at the Linköping Institute of Technology were assigned the task of creating a security solution for banks.

- **Mid-1980s: New strategic orientation**
  
  Dr. Brüer was recruited as Sectra’s President and subsequently proposed new ideas about how to transform Sectra into a “proper” company. The company changed its emphasis under Dr. Brüer’s leadership, making the transition to selling products and system solutions in the areas of data security, digital radio and image coding. This new strategic orientation marked the beginning of Sectra’s expansion phase.

- **1987: Sectra won its first defense order**
  
  After spending its initial years working for bank customers, in the 1980s the company began focusing on the customers that have the most stringent requirements of all in terms of security. Sectra has been the market leader in encryption equipment for Swedish Defense since the mid-1990s, and today the company’s products are used by civil authorities and defense forces in more than half of the EU member countries.

- **1988: Sectra’s operation within digital image coding expands to medical technology**
  
  Dr. Torbjörn Kronander was recruited to Sectra and brought about an expansion towards digital image management systems for radiology departments in 1988.
• **1993: Digitizing radiology operations**
In 1993, Sectra digitizes radiology operations in Mjölby, making it the first in Sweden and among the first in the world with totally film-free radiology. Today, more than 1000 hospitals use Sectra’s system.

• **1999: Initial public offering (IPO) at the Stockholm Stock Exchange**
Sectra was listed on the exchange NASDAQ OMX Stockholm AB in 1999. The aim with the IPO was to validate that the company had grown to become a strong player before continuing on its path toward internationalization. Listing on the stock exchange paved the way for strategic acquisitions and financing of the continued international expansion. It also gained Sectra greater legitimacy in the eyes of its customers and partners. In 1999, also, Sectra delivers the Tiger secure mobile telephone to the Swedish Defense Forces, which becomes the first in the world with eavesdrop-protected mobile telephone communications. Today, Tiger products are used by government authorities and defense forces in more than half of the EU’s 27 member countries. In addition, in 1999, Sectra is first out with digitized prosthesis modeling for orthopedists. Sectra’s orthopedic solution is world-leading and has thousands of users in hospitals and orthopedic clinics.

• **2002: Launching mammography systems**
Sectra launches the unique mammography system, Sectra MicroDose Mammography. Based on revolutionary photon-counting technology, the system has the lowest radiation dose on the market. To date, the system has been sold to customers in 15 countries.

• **2005: Revolutionary image processing methods**
Sectra launches revolutionary image processing methods for extremely large image volumes. Sectra’s new work stations for review of radiology images, which among other customers is used by the European expertise network Telemedicine Clinic, is based on these methods.

The historical events in the history of Sectra can be observed in figure 4.4.
4.2.1.2. Structure
Sectra group consists of two completely independent business areas each of which has its own structure. The overall position of these business areas within the group can be seen in figure 4.5. Sectra’s corporate level is responsible for functions like accounting, IT, and investment relations. Each business area has division-based structure mixing with a functional structure. In medical systems, the company is structured into four product divisions including RIS/PAC, Mammography, Orthopedics, Rheumatology and three regional divisions including Northern Europe, North America, and rest of the world. Each product division has its functions including development (software development), quality assurance, sales and marketing and the product management and is responsible for developing and offering products and services that can be sold in the company’s regional markets. Each regional division is responsible for selling as much as possible in their region, sale and marketing, service and support and some local developments that are just applicable to their focused market.
On the other hand, the Secure Communication Systems is organized in three main divisions including sales, product division voice encryption, and product division crypto development. Besides, both product divisions have functions like after sales, help-desk, and so on. The product divisions are involved in development and more in product issues. Sales partly do ordinary sales functions. Parts of the routine works are supported by Sectra central management but issues like training, salaries are handled by the division managers. Employment matters are also handled by division managers.

Regarding the product divisions’ tasks, the crypto development helps the customers for custom specific solutions. They usually need a crypto system, sometimes they have already communication system and they want crypto solution to secure their communications. Voice encryption is responsible for developing standard solutions that is mainly Tiger products.

4.2.1.3. Customer and products

The markets where Sectra in present and their contribution to the group’s net sales are Sweden (32% percent of the net sales), Rest of Europe (37%), North America (29%) and Rest of the world (2%). Medical Systems, as a business area within Sectra group, provides industry-leading RIS/PACS, mammography and orthopedics solutions. Sectra provides radiologists worldwide the opportunity to cope with such issues as increased financial pressure, shortage of resources as well as increasing data volumes. Today, Sectra’s medical solutions are used by more than 1,000 hospitals worldwide. Some examples of medical solutions can be highlighted that have a strategic role to make the company different from its competitors including unique MicroDose Mammography solution, revolutionizing orthopedic surgery, bone health solutions.

In secure communication systems, the main customers are Swedish and Dutch security authorities. Two main products of this business area are Tiger product line to meet government and defense customers’ strictest demands for secure voice communications and customer-specific encryption systems for government customers. From November 2009, Sectra launched a new product to protect telephony up to the security level restricted called as Sectra Panthon. The president of this business unit claims:

“*In 1990 we started as a small company working only in Sweden until 2000 that Swedish authorities were our main customers. Then on the beginning of 2000 we tested on different markets for around 5 years. Then 4-five years ago we decided to focus on EU market to meet our customer needs better and to be more successful.*”

The decision to select a specific market and customers come from Sectra’s vision, mission, and strategies and everyone in Sectra communication is aware of them.
According to Sectra’s CEO:

“Our strategy is to acquire companies with products that strengthen our offering to existing customers, or provide complementary markets for our products,”

4.2.1.4. Vision, Mission, Strategies

Sectra has a vision to become the worldwide market leader in selected niche markets. The strategies of the company have been defined as follows:

- To work together with the most qualified customers to ensure that products and systems meet the market’s strictest requirements in terms of performance, quality and user-friendliness.
- To control development projects based on commercial, productive customer requirements.
- To work long-term with strategic and complementary partners to reach a broader geographic market and expand product offering to customers.
- To recruit and cultivate highly qualified employees.

To achieve its goals, Sectra prioritizes profitable growth, close and long-term cooperation with customers and partners as well as innovative technology. Employees’ competency, commitment and motivation are the basis for the company’s building success.

4.2.2. Breakthrough points

From the history of the company we can distinguish some big, fundamental changes in the products, markets, or technologies happened time to time. In medical system the most outstanding product that is PACS was installed first in 1992. Digitizing radiology operations in 1993, first installation of completely film-free radiology in 1994, first presentation of windows-based diagnostic workstation in 1996, launch of the first orthopedic solution and full RIS/PACS desktop integration in 1999, introduction of world first photon-counting system for digital mammography in 2000, launching mammography systems, first installation of Sectra MicroDose Mammography, and first film free Mammography PACS in clinical operation in 2002, launch of web deployable PACS in 2003, introduction of revolutionary image processing methods and launch of unique data handling model for extremely large data sets in 2005, introduction of new generation of PACS workstation in 2006, launch of next generation photon-counting mammography system and launch of RIS/PICS workflow efficiency tool in 2007, and finally, introduction of enterprise-wide 3D visualization tool in 2008 are considered as breakthrough points in medical system business area.

At secure communication system, we can see some breakthrough points such as the introduction of high speed voice encryption in 1990, launch of secure mobile system in 1996 that caused company entering a new technological area, and launch of new voice encryption called as sectra Panthon in 2009 to target a new customer segment.
4.2.3. Managing the value chain

Sectra does not have much routine work like production line. But there is still some routine works in software development or in marketing

“We have in-house value chain; start with R&D and end to the customers”

“We don’t have any production. From the value chain I would say that we don’t really buy things and increase value and then sell them. We are knowledge based company I would say we are selling our knowledge more than a product.”

They have a close cooperation with their customers.

“What we do is that first of all we are looking at the system they have and then we suggest solutions then we agree with the customers about solutions then we will develop that solution.”

They also have the support maintenance of the product that they deliver to make sure that if something changes in customers’ system, they are able to maintain the functionality that they delivered in the beginning.

4.2.4. Research and Development activities

With more than 20 years of leading innovation and through close cooperation with customers and top research centres, Sectra maintains its position in the forefront of the medical IT development. Also in secure communication area the company is involved in R&D activities with more focus on development part.

“In developing new products, we always working in projects; both when it is custom-products and if we maintain or develop our own processes we mainly work in projects.”

“The way we design and develop is basically through cooperation with our customers because they are very knowledgeable.”

However, in communication technologies, for example, in mobile technologies the company has very skilled and knowledgeable employees. As part of their works and in competence groups they have to keep up-to-date regarding new technologies mainly by reading articles on the internet and also going to conferences and training courses and so on. Sometimes, they employ the knowledge from outside the company:

“And from time to time if we move to a new area that we haven’t worked before then we normally search for somebody in Sweden that already has the knowledge and cooperate with them if it is not our core business.”

A main part of the company’s development activities comes from the collaboration with customers:
“Our main inspiration comes from the Swedish and Dutch authorities that we have close collaboration with them from usability point of view.”

“I would say our main customers are Swedish security authorities and Dutch security authority. Much part of knowledge and competencies are developed in cooperation with them in our core business that is the security part of the conversation.”

They also get information from help desk and after-sales and collect information from them to decide if they need a development in a product based on customer needs. Besides, they use their products for daily communication and by this they put themselves in the same situation as their customers to make sure if they work correctly and they are easy to use.

“Especially we do this when we introduce a new product; we have a group of persons in our company that use the product for a period of time. Also we have some persons that are more interested in new technologies and they come up with ideas when they see what is going on in the rest of the world to improve our products.”

The company has an established procedure for sharing knowledge and learning. In competence group, information and knowledge regarding technology are transferred within these groups. Everybody who works in development parts is part of these groups. Also transferring and spreading information between projects is done in these groups. Also each time a project starts and ends, they have an information meeting consisting of everybody who is involved in the development to discuss the knowledge they have about the project and the lessons learnt from the problems that happened during the project are presented. There is also the cross division cooperation between the after sales and the help desk in different product divisions between people who work on similar things so they learn from each other. Also in sales department they have weekly meetings to learn from each other. They also have strategy meetings to spread information between sales and product divisions.

4.2.5. Resources

Sectra employs both internal and external resources in its development activities.

“We have PhD students sponsored by Sectra look at Sectra materials. Employed by Sectra but work at university, that’s a way for getting the new research and areas to the company.”

They normally use consultancy firms especially in areas that are not considered as their core business. In communication unit where they do not have in-house manufacturing they use subcontractors that are specialized in assembling the electric equipment.

“We use our own knowledge in our core businesses but from time to time we use other knowledge-based companies. For instance, if we move to a new communication area that we haven’t worked before, we use the knowledge of our sub-contractors.”
They cooperate with universities and other educational institutions in shape of some student-employees or in shape of master thesis students. They have had some employees who worked part time here and some parts at university to take their PhD.

“From time to time we take part in research projects and make it more practical oriented.”

Sectra’s operations have grown both organically and through strategic acquisitions. The first acquisition was in 1995. Sectra then purchased Imtec, a Swedish company which, like Sectra, developed digital image management systems for healthcare applications. The most recent acquisition was made in 2006, when Sectra acquired ImaXperts BV, a Dutch company that distributes medical systems in the Netherlands, Belgium and Luxembourg.

4.2.6. Employees

One of Sectra Group’s goals is to encourage employees to develop and grow as individuals. Within Sectra, there are excellent opportunities for employees to influence their job situation. At the same time, each employee is expected to take great responsibility for the work that he or she is employed to perform. Work should be perceived as meaningful, and it is important that employees see the link between their own efforts and success for Sectra and its customers. Internal rotation is also encouraged within Sectra, since collective expertise is then fully utilized and cooperation within the Group encouraged. Majority of Sectra’s employees has academic training, and most have engineering degrees. A large number of employees have fulfilled graduate studies, and five professors and 22 persons with technology doctorates are linked to Sectra’s operations. Within each business area, they work actively to ensure that employees in various roles have the right skills to be able to perform quality work. This takes place through courses, training programs, certification programs and instruction.

In medical unit, in R&D more innovative people are working but in sale and marketing less. There are high degree of interdependencies within divisions and lots of coordination. Employees’ evaluation is done regularly.

“We do it through yearly. Each year every employee has a meeting with his/her supervisor to review the last year positive and negative points and to see what the employee wants to do in the next three years. In between every 6 months we have a follow-up meeting to evaluate what has been planned. The main target of such meetings is to make sure that every employee has the knowledge in the area that we need and to develop their knowledge if needed.”

Employees are paid based on the level of their performance.

“We have development talk, training talk, and salary talk for each employee. So, the salaries are set individually based on what they have accomplished.”
There are high level of collaboration and task interdependency between employees.

“In development work where you work in a team in projects in teams of 3-15 persons then of course you are dependant on the others’ work. So part of the evaluation is based on the ability to work in teams and not only technical skills are evaluated; the ability of keeping deadlines and cooperation abilities.”

However for product development more skilled, knowledgeable people are working.
Analysis

The objective of this chapter is to analyze the findings of our investigations at the companies BT and Sectra based on the theories that we found from the literature review. In other words, we will analyze the situation of the companies regarding their dynamic capabilities and different options they use for realizing ambidexterity.
5. Analysis

5.1. Exploration and Exploitation

In this part we analyze the activities of the companies BT and Sectra to conclude which one of these activities are considered as exploratory and which one are considered as exploitative. In doing so, we refer to our theoretical frame where the concepts of exploration and exploitation are defined connecting them to the empirical findings from our investigation at these two companies.

Exploration activities, according to March (1991) and Soosay & Hyland (2008), refer to innovative changes, discovering new possibilities, new knowledge and technologies. However, exploitation refers to any kind of activities that held by any company using its existing resources and knowledge to increase its efficiency, profitability and production rate. Regarding these definitions we will examine the conditions in BT and Sectra in the following lines.

In 1948, BT started to manufacture the pallet-measuring 800×1200 mm and that was the new idea in material handling products. Long years later, BT introduced first automated trucks to the market in 1977. Later on BT did innovative changes for producing the first ergonomic trucks which has the tilting cab. BT introduced Voice ordering system in 2007 by using new technologies and knowledge. All these activities can be considered as exploration because they are more related to innovative changes, finding out new opportunities and using new technology and knowledge.

On the other hand, BT is working in the same industry; i.e. material handling since 1946. They provide a high range of products that are more or less similar to each other. There are lots of modifications that BT is doing to have more efficient and more ergonomic products. By looking at BT’s products list, we can distinguish a diversified range of production offers including ten product categories and tens of product models (listed in appendix II). These production categories and models can be distinguished as different models of one major production of BT that is warehouse truck. Most of them are produced resulting from improvement in existing products. For instance, they made an improvement in one of their products which had 10 m pipe to reduce the transaction noise and drivers shock. BT also uses some supporting wheels in their products to make a better balance for transferring heavy materials. In another case, BT modified one of their truck models by replacing key with a pin code system to switch on the truck. Also, BT designed Levio powered pallet truck range for more safety, durability and ease of operation in loading and unloading. Another example is Ixion SPE200D stacker which has double capacity and provides better stability and traction. Besides, BT has a special product department responding to their customers’ needs by doing some modifications. These are only a few examples of such improvements among many. Since all these product improvements are related to increase efficiency and production rate, they are considered as exploitative activities at BT. In order to stay competitive and increase the profitability BT bought Raymond in 1997 and enhance its position in North American
market. In 1999, BT by acquiring CESAB wanted to increase its production rate by adding counterbalanced trucks to its product line.

Sectra, on the other hand, has experienced a lot of innovative activities and transformations since they were founded. In 1987 Sectra obtained their first order from defend sector as a new customer. In 1988, they entered the medical technology business area. Sectra introduced a new product known as high-speed encryption solution in 1990. They installed the first PACS in 1992 and one year later they started digitizing radiology operations introducing film-free radiology solutions that created new opportunities for them. In 1996, Sectra communication system entered a new technological area by introduction of secure mobile systems. First Orthopedics digital solution was introduced in 1999. In 2000 Sectra introduced the world’s first photon-counting system for digital Mammography as a new technological area. Sectra installed the first MicroDose Mammography system in 2002. These examples indicate innovative changes using new technologies and knowledge and show exploratory activities at Sectra.

In addition, back to theoretical frame, exploration is defined as activities that increase variation by creation of new possibilities and opportunities to focus more on future. On the other hand, exploitation is characterized as routine activities that enhance efficiency and discipline at the company and also continuous problem solving procedures (Smith & Tushman, 2005). We also defined exploitation as activities that help companies learning from their local search and existing knowledge whereas exploration is associated with activities that go beyond organizational boundaries (Baum, Li, and Usher, 2000). Now, the condition of both companies is examined in the following lines.

For instance, BT has well defined tasks for welding, painting and assembling in production which are considered as routine activities. Besides, since BT is part of the Toyota Industry Corporation (TICO), they follow the continuous improvement policy based on Kaizen approach. This approach is used in problem solving procedures in which improvement groups at the company identify any problem in products and processes and solve it. This approach indicates that BT is involved mainly in exploitative activities. In addition, BT uses some check lists and guidelines in their product development department that shows they want to keep discipline and efficiency even in their exploratory activities.

On the other hand, in 1985, Sectra adopted a new strategic orientation expanding its working areas to data security, digital radio and image coding. In addition, they target for new possibilities by launching new solutions and new generations such as launching of web deployable PACS in 2003, introduction of revolutionary image processing methods in 2005, launch of new generation of mammography system in 2007, enterprise-wide 3D visualization tools in 2008 and launch of Sectra Panthon in 2009. As all these activities imply creation of new possibilities and bringing more opportunities for the company, they are considered as exploratory activities at Sectra.

However, Sectra is a company that has almost no production line and they have less routine works because they are mainly based on knowledge and high tech solutions. Therefore, we can say that there are a few exploitative activities at the company. Sectra was providing bank security solutions since it was founded in 1978 until 1985. During
these years they used their existing knowledge and resources that were mainly exploitative activities.

From above discussions, we can conclude that BT is considered as a company involved more in exploitative activities while Sectra can be distinguished as a knowledge-intensive company involved more in exploratory activities.

5.1.1. Market dynamism

As we discussed in theoretical frame, high-velocity environment is characterized as a market condition with high level of environmental uncertainties and instability where there are discontinuous and rapid changes in competition, technology and demands. Even change itself is unpredictable and nonlinear. In such an environment, company’s competitors and suppliers are indefinite and changing as well (Eisenhardt, 1989; Bourgeois & Eisenhardt, 1988; Eisenhardt & Martin, 2000). On the other hand, in moderately-dynamic environment the industry in which company is working is more stable with definite competitors and suppliers. Even though changes in such a market happen frequently, they can be predicted (Eisenhardt & Martin, 2000). The market conditions regarding two companies Sectra and BT will be examined as follows.

Sectra works in two business areas; i.e. communication and medical, both of which are characterized as highly changing industries. They are knowledge-based industries with frequent innovations. Both industries are also involved in highly sensitive products and services with strict requirements. In other words, customers in these industries have highly strict, standardized requirements. Medical solutions especially when they are IT-based are very research-based and always updated products with new technologies come to the market. Sectra provides such solutions continuously coming up with new, innovative systems. That is why they maintain a head position in the industry. Also, the secure communication industry is involved in high-tech solutions. Sectra has strategically important customers in this area with high expectations and sustains the leading position in this market as well. All in all, we can conclude that Sectra is involved in a high-velocity environment in both business areas.

In contrast, as mentioned before, BT is working in the same industry; i.e. material handling since 1946. BT is in a mature market and employees do not expect big changes every day. BT knows what their customers want and, so, most of the changes and improvement that they are doing on products are expected. For instance, BT knows customers want low cost, high quality and better performance in products so they do some definite changes in their products to satisfy their customer’s needs. The range of production development in BT shows that they are working at the same industry for almost 60 years but with small modifications in their existing products. In other words, they do not frequently make radical changes in their products while they successfully work in the warehouse truck industry. This shows that BT is involved in an environment with high stability and slow changing so it is considered to be in a moderately-dynamic environment.
5.2. External vs. Internal

In this part, we examine how companies BT and Sectra employ their internal and external resources to exercise both exploitation- and exploration- related activities. As we discussed in theoretical frame, one way for companies to have long term survival is to use external resources as well as internal resources because they can overcome the tension of adaptation with changes better and get sustainable competitive advantage by moving beyond local boundaries (Rosenkop & Nerkar, 2001). The role of the externalization gets crucial and one suggestion for having both exploitation and exploration is to externalize one or some activities through inter-organizational collaboration such as outsourcing or establishing alliances (Baden-Fuller & Volberda, 1997; Holmqvist, 2004; Rothaermel & Deeds, 2004). However, companies outsource activities and processes that they are familiar with their technologies but it is not strategically important for companies. When technologies are strategically important for companies and they have high familiarity with them, it is better for companies to use internal R&D. Firms can follow external acquisition when they have less familiarity with technologies but it has high strategically importance for companies. By studying BT and Sectra, we realized that both companies use external resources through outsourcing, alliances, and acquisitions.

BT externalizes some activities through outsourcing. For instance, BT outsources machining processes because they want to get advantage of low cost and also grow faster and they did not have enough equipment for machining in Mjölby. BT had collaboration with Saab around 1960 and with Clark before 1970 in order to get an advantage of using alliances. However, collaboration with Clark in order to have counterbalanced trucks in BT’s product range was not a good experience for BT as Clark had some problems with their products and customers were not happy; so, BT quit the contract with Clark. BT acquired Rayomond in 1997 and CESAB in 1999. Buying Raymond was important for BT because they wanted to be strong in American market but they were not familiar with that. In addition, having counterbalanced trucks was strategically important for BT but they were not strong enough in that area so they acquired CESAB. However, they used consultancies which consider as external resources for those acquisitions.

Sectra outsources in a form of subcontracts. They use subcontractors, for example, for assembling electric equipment because they do not have in-house manufacturing. In addition, Sectra is using consultancies for those technological and competency areas which are important for them but they have no previous experience and cannot build themselves. For example, when they want to enter a new market they use the knowledge of their sub-contractors. Sectra is doing exploration alliances by focusing more on research through collaboration with Linköping University and other educational and research institutions. Sectra, for example, sponsors PhD and also some master thesis students at Linköping University and cooperates in research projects with them. In addition, Sectra also has exploitation alliances with focus on development through the cooperation with Swedish and Dutch security authorities. These alliances result in developing knowledge and competences in their core business. These activities that are done by Sectra show they use alliances through inter-organizational collaboration. Sectra uses external resources in a form of acquisition as well. Sectra bought Imtec, a
Swedish company in 1995 and acquired ImaXperts BV, a Dutch company in 2006. Both acquisitions were strategically important for Sectra to develop their knowledge in medical products and to strengthen their position in Netherlands, Belgium and Luxembourg markets.

From above discussions, we can conclude that both companies BT and Sectra using internal resources as well as external resources in a form of outsourcing, alliances, and acquisition.

### 5.3. Sequential vs. Parallel

To analyze the situation of both companies regarding if they follow sequential or parallel mechanism to achieve ambidexterity, we review the theoretical frame we developed in chapter 2 and relate the definition of these two mechanisms with our empirical findings.

As described, sequential balancing is more appropriate when companies are in low-velocity environments (O’Reilly & Tushman, 2008). As we already concluded that BT is a company working in a low-velocity market, they make a balance between exploration and exploitation sequentially. This mechanism can be observed from the BT’s changes and development trend as shown in figure 5.1. This figure shows that BT has been involved in long terms of exploitative activities punctuated by some radical, discontinuous exploratory actions. Introduction of the first BT hand pallet trucks in 1948, the first automated trucks in 1977, introduction of ergonomic trucks in 1993, and introduction of voice ordering system in their trucks in 2007 have been revolutionary...
changes in the history of BT. This trend indicates that BT has followed a sequential mechanism to make balance between exploration and exploitation.

On the other hand, parallel balancing is more suitable in conditions where companies are in high-velocity environments (O’Reilly & Tushman, 2008). As we realized that Sectra is a company in high-velocity environment, they make parallel balancing between exploration and exploitation. We can observe this mechanism from Sectra’s changes and development trend as shown in figure 5.2. This figure indicates that Sectra is a company involved in both exploitation and exploration at the same time. We can see in the figure that while the company is doing its routine and exploitative activities, it is involved in exploratory activities. Exploratory activities have frequently happened in the history of the company except the years 1978 to 1985 when the company was more involving in routine works to be established. Adopting a new strategic tendency in 1985, introduction of high-speed crypto in 1990, installation of first PACS in 1992, digitizing radiology operations in 1993, first Photon-counting system in 2000, introduction of MicroDose mammography system in 2002, revolutionary image processing methods in 2005, launch of new generation of mammography system in 2007, and launch of Sectra Panthon in 2009 are some examples of exploratory innovations achieved by the company among much more.

In addition, when companies have shortage of resources and they require allocating them to either exploratory or exploitative activities, they distinguish exploration and exploitation as the two ends of continuum. In this condition, an appropriate mechanism
Achieving Organizational Ambidexterity

5.4. Architectural (Structural) vs. Contextual

As we mentioned in our theoretical frame, companies can be ambidextrous through having both structural and contextual ambidexterity (Birkinshaw & Gibson, 2004). The architectural ambidexterity can be accomplished through either task partitioning or temporal separation. It can also be achieved through creating a new organizational unit to involve in other tasks besides the routine, usual responsibilities. The contextual ambidexterity is, on the other hand, a kind of organizational context in which every employee can be ambidextrous and exploration and exploitation exist at the same time within each organizational unit (Gibson & Birkinshaw, 2004) because an organizational context is in a way that allows employees to decide whether to explore or exploit. We also mentioned that an ambidextrous context is characterized by four attributes of discipline, stretch, support, and trust (Gibson and Birkinshaw, 2004).

We realized that BT is more involved in exploitative activities and as a result most of its functions are doing routine works. However, sometimes they have some exploration in shape of big changes such as introduction of the first BT hand pallet trucks in 1948, launch of automated trucks in 1977, introduce the first ergonomic trucks in 1993 and launch the voice ordering system in their trucks in 2007. BT was doing these exploration activities in product development function in which other exploitative activities such as small development in trucks occurs as well. It shows that BT...
accomplishes structural ambidexterity by a temporal separation. In addition, BT achieves structural ambidexterity through task partitioning. In doing so, for instance, they divide employees in product development in a way that more knowledgeable experts are involved in exploratory activities while others are assigned exploitative tasks. BT created another function called as special products in order to do some modification according to customer’s requirements. However, this unit is also doing exploration activities just for big companies such as IKEA. BT creates a cooperative environment where employees can take part in low level decision and give an idea for improvement solutions through Kaizen policy. They also support employees and encourage them to talk about problems in order to solve them.

Sectra, on the other hand, is a company that is more involved in exploratory activities. However, it includes some exploitative and routine tasks as well like any other companies. It has two independent business units with subdivisions each of which consists of its own functions like development, sales and marketing. Both business units are involved in both exploratory and exploitative activities. In this way, Sectra has taken a structural ambidexterity through task partitioning in each business unit. However, each business unit includes functions that are more exploratory and functions that are mainly exploitative. For example, in Communication Systems business unit, there are two product divisions each of which is involved in both exploratory activities like product development and exploitative activities like marketing and sales. However, there is a sales division that is mainly involved in sales ordinary tasks. In Medical System business unit four product divisions exist that consist of both exploration such as software development and exploitation such as sales and marketing, quality assurance and product management. There are also three regional divisions that are involved in exploitative activities mainly through sales. In addition, Sectra accomplishes structural ambidexterity through task partitioning in a way that employees are divided to exploitative and exploratory activities according to their skills and knowledge. For instance, more skilled, knowledgeable employees are involved in product development.

Sectra has also created an ambidextrous context in which all employees are encouraged to take part in both exploitative and exploratory tasks through a cooperative environment and ambitious goals. Employees support each other by sharing their knowledge in competence groups. They are committed to the company’s goals through shared vision and mission but they are also encouraged to develop their knowledge and competencies and to follow more ambitious goals.

The above discussion indicates that both company BT and Sectra adopt both structural and contextual ambidexterity. Therefore, we can see both mechanisms as complementary options to achieve organizational ambidexterity as already mentioned in theoretical frame.

5.5. Senior management behavior

In this part, we examine the behavior of senior managers at both companies BT and Sectra regarding four attributes that already mentioned as critical factors for a senior
manager to lead an ambidextrous organization. These factors are clear strategic intent, shared vision and value, social integration and reward. We first refer to our theoretical frame and then analyze the situation of both companies regarding each attribute.

The first attribute that senior managers should be involved in order to help company achieving ambidexterity is to determine a clear strategic intent. This attribute indicates that the firm should have clearly defined strategies regarding both short term profitability and long term adaptability with environmental changes.

In BT we could not find a clearly defined strategy that aims at exploitative and exploratory objectives. Since they are a part of TICO, they normally follow the overall strategies defined in corporate level at TICO. Sectra, on the other hand, has a clearly written strategy that shows the intention of the company to work and focus on both exploratory and exploitative activities. One part of their strategies concerns the exploitative objectives like to control development projects based on commercial, productive customer requirements and to recruit and cultivate highly qualified employees while other part of their strategies shows their long-term objectives and is exploration-oriented like to work long-term with strategic and complementary partners to reach a broader geographic market and expand our product offering to customers.

The second attribute concerns the role of senior managers to integrate different parts of organizations and employees through shared vision and values which results in combining high level of exploratory and exploitative activities within the company (Jansen, et al., 2008). When visions and values are shared companies’ business units are more likely to communicate rather than to compete. In this condition, more opportunities are generated for resource exchange and combination across exploratory and exploitative units (O’Reilly & Tushman, 2008).

BT’s vision is defined as raising efficiency in order to improve productivity and also to make their brands strong in the global market. In addition, core values in BT are determined as quality and service, reliability, commitment and improvement. BT’s vision and values are reflected throughout the organization and make a cooperative environment. For instance, as there are several projects are running at the same time in product development department, BT sometimes faces lack of resources. In order to overcome this situation managers cooperate with each other for resource exchange. Sectra has a clearly defined vision; to be the world leader in selected niche markets. They have communal core values that causes them to integrate whole the company towards achieving this vision. These vision, goals and strategies are explicitly stated and communicated throughout the company and indicate its ambition to achieve both exploitative and exploratory targets. To achieve its goals, Sectra prioritizes profitable growth and highlights the importance of employees’ competency, commitment and motivation that can be considered as exploitative values and targets. On the other hand, they point out the importance of close and long-term cooperation with customers and partners as well as innovative technology that can be mentioned as exploratory values.

The third characteristic of senior managers highlights the meaning of “group proud”, “team spirit” and “teamwork” which is called as social integration. Those members that are socially integrated contribute to greater efficiency in task coordination, internal communication, increasing negotiations, compromise and collaboration. This results in
better organizational performance and team success (O’Reilly, et al., 1989; Smith, et al., 1994; Michel & Hambrick, 1992). In this condition, members within companies realize opportunities and synergies for combining and reconciling exploratory and exploitative goals (Jansen, et al., 2008).

BT’s employees are socially integrated in a way that they participate in low level of strategic decisions. However, employees’ tasks are not dependant on each other as their main daily tasks are done in functions such as purchase, manufacturing, finance and so on. As a result, although communication and collaboration in product development projects exist between employees and also between employees and senior managers, it is not in a high extent. Sectra, on the other hand, entails a high degree of collaboration between employees. Most of the works at company are executed in shape of projects where people work in teams. In addition, there are some competence groups in which people with the same areas of knowledge and competences sit and share their knowledge and ideas. There are also collaboration and communication between employees and managers through regular meetings such as development talk, training talk, and salary talk. In these meetings they talk about every employee’s previous achievements and future plans and set some individual goals and objectives based on company’s overall strategies and goals.

The forth factor that senior managers should consider is reward system. Giving reward is associated with a firm’s ability to combine high level of exploratory and exploitative activities (Jansen, et al., 2008). Reward system should be arranged in a way that causes more collaboration and communication rather than jealousy and unhealthy competition among employees. In a high-velocity environment, task interdependency among employees is high which needs more collaboration and coordination between them. In contrast, in moderately-dynamic market there is less task interdependency and less cooperation between employees. Reward in both markets should be paid fairly. However, paying reward disparities has worse effect in high-velocity market than moderately-dynamic market (Siegel & Hambrick, 2005).

BT rewards their employees according to their new ideas regarding new patent or suggesting the ways to reduce the cost. For instance, when one employee makes a proposal that reduce the cost of product or the cost of producing that, then BT calculates the gain for one year and that person will get the half of that gain. As a result, sometimes they paid huge amount of reward to one employee but as they are in moderately-dynamic market, they do not need too much collaboration and exchange information between employees. Employees in Sectra have a lot of cooperation with each other and high degree of task interdependency exists among them. In Sectra the reward system is in a way that does not bring jealousy at company because mostly it is a fixed salary and the variable salary is based on every employee’s performance during a year and is decided on salary talk between employees and managers. As a result Sectra is giving rewards in a fair way that decreases the possible conflicts between employees and even encourages them to cooperate with each other.

The above discussions show that senior managers at both companies BT and Sectra have a critical role in exercising attributes that enhance the possibility of being ambidextrous. However, each company’s senior managers focus on these attributes to a different degree and in different ways.
5.6. Dynamic Capabilities

In this part, we analyze the situation of the companies BT and Sectra regarding the components of dynamic capabilities known as sensing, seizing and reconfiguration. We refer to our theoretical frame and discover the connection between the theoretical descriptions of these concepts with our empirical findings at two companies.

5.6.1. Sensing

Sensing new opportunities were already defined as “scanning, creation, learning, and interpretive activity” to explore new technologies and markets through the processes of directing R&D, distinguishing development in science and technology, and collaborating with customers and suppliers to identify the possibilities for upcoming innovations (Teece, 2007).

In this regard, looking at Sectra’s activities, we can find some implications for sensing behavior at the company. Sectra has strong collaboration with its customers to develop new technologies. This collaboration along with the company’s own knowledgeable employees and R&D activities help it sensing the upcoming technologies and innovation in the environment. Also, there are some competence groups at Sectra consisting of some skilled, knowledgeable employees working together at the same technological areas. These people distinguish new technological opportunities through reading articles, searching on websites, participating in scientific conferences and sharing their findings. Sectra has also traditionally close collaboration with universities and research centers through cooperative research projects, and funding and hiring PhD candidates. By such collaboration, Sectra gets to know updated knowledge and technology in the fields of medical and communication systems. All in all, sensing and identifying new opportunities at Sectra involve activities that go beyond the company’s borders and local search that are necessary for a firm working in a fast changing environment.

On the other hand, BT is involved in sensing new technological innovations through its R&D activities. Since BT is not working in a highly dynamic industry it does not face frequent innovative changes. Therefore, the sensing activities of the company are done mainly through internal R&D functions. However, BT has a unit for special products in which product development and modification are made according to customers’ special requirements. But this includes a very small part of sensing activities at the company.

5.6.2. Seizing

As we discussed in theoretical frame, seizing opportunities is related to strategic choices for investing on appropriate products, markets, and technologies in order to capture the value. Seizing opportunities occurs through selecting the right product architectures and business models, selecting the enterprise boundaries, managing complements and platforms and avoiding bias, delusion, deception, and hubris (Teece, 2007).
BT selects the right product architectures and business models through embedding those features and technologies in their products to offer them in better ergonomics, higher quality, and lower cost as they know customers want these elements. BT can continuously improve their products by listening to customers’ voice. To seize opportunities through selecting the enterprise boundaries, BT chooses right companies for alliances. They quit collaboration with Clark because they realized Clark was not strong enough and customers were not happy with their products. In order to manage complements and platforms, BT outsources Machining to gain advantage of scale without engaging in manufacturing. Sectra implements a few of its operations that are not among its core business through outsourcing such as using subcontractors for assembling electric equipments. In addition, to avoid bias, delusion, deception, and hubris, management team in BT creates the environment in which all employees feel free to say their opinion and problems because BT neither blames nor personalizes employees for their mistakes. BT also rewards those employees that have good ideas regarding patent, problem solving ideas as well as opinions for decreasing costs. BT is also communicating goals and value within a company. Values that reflect throughout the company are quality, service, reliability, commitment and improvement and everybody knows about it.

Sectra seizes opportunities by selecting the right strategic choice such as acquisition of Swedish company Imtec in 1995 and Dutch company Imatxerts BV in 2006. The first acquisition helped Sectra developing its medical business using the knowledge and resources of Imtech because they both work in the same area that is digital image system for healthcare. The second acquisition developed the Sectra’s market. Therefore both acquisitions were considered as right strategic choices. As mentioned before, Sectra has collaboration with universities to sense new technological opportunities. However, this collaboration helps company seizing opportunities as well by hiring PhD students who were sponsored by Sectra. These students can employ their achieved knowledge when they will be hired at Sectra. In order to avoid bias, delusion, deception, and hubris, Sectra makes its employees commitment and loyal through clearly defined and well communicated vision and mission.

5.6.3. Reconfiguration

Managing threats and reconfiguration, as already defined in theoretical frame, indicates the ability of the firm to recombine and reshape the organizational assets and structure to respond to changes in market and technologies as firm grows. This ability is facilitated through some works including decentralization and near decomposability, managing co-specialization, learning, knowledge management, and corporate governance (Teece, 2007). Looking at our empirical findings at BT and Sectra, we can find some implications for these actions.

Sectra is showing a high degree of decentralization by having a multi-divisional structure where every business unit consists of independent divisions for each product and regional market. However, these divisions are integrated by a business manager and the common vision and mission. This integrated, multidivisional structure indicates near decomposability at Sectra through which different divisions of the company are able to
make quick decisions regarding issues like how to reconfigure their resources and when to develop or employ a new technology at their focused area. In addition, new achieved knowledge at Sectra is transferred by competence groups. In these groups people with the same area of knowledge and competency share their findings from conferences they have participated or training courses they have attended. Also, before and after a new project starts, they discuss about the knowledge they will apply to the project and the lessons they learnt from the project. Sectra has a well-established corporate governance procedure since it is listed on the OMX Stockholm Exchange.

BT, on the other hand, can be considered as a centralized company with mainly functional structure especially when it comes to strategic decisions because they are part of the Toyota Industry Corporation and such decisions are mainly made at Toyota corporate level. Even though BT follows the Kaizen approach through which all the employees take part in continuous improvement by their suggestions, this participation does not apply to decisions regarding technological and environmental changes. However, Kaizen as an approach for continuous improvement promotes the organizational learning at BT through sharing knowledge between employees at different teams and through learning from mistakes. BT has made its processes fit with its strategies through which they can keep a continuous alignment that enables the company to follow a continuous improvement approach. In other words, they follow the kaizen strategy along with a modular approach for product development processes through which they are able to exercise a lot of modifications at their products.

### 5.7. Summary of analysis

We summarize the findings of our analysis in a comparative illustration as Table 5.3. This table consists of parameters that we used to analyze our empirical findings at BT and Sectra. BT is involved in more exploitative activities whereas Sectra is more exploration-oriented. BT is working in moderately-dynamic market and using internal resources as well as external resources such as consultancies, alliances, acquisitions and outsourcing. BT balances exploration and exploitation through sequential mechanism. However, Sectra is in a high-velocity market and using both internal and external resources like BT, but Sectra uses parallel balancing for exploration and exploitation. Both companies BT and Sectra adopt both structural and contextual ambidexterity as a complementary option to achieve organizational ambidexterity. In BT there is a less clear strategic intent whereas in Sectra strategies are clearly defined. Vision and values are shared throughout both companies. In Sectra the degree of cooperation is higher than BT because there are more task interdependencies within Sectra. BT rewards their employees based on their new ideas whereas employees within Sectra are compensated by their performance. Another comparison between BT and Sectra refers to dynamic capabilities. BT senses less opportunity and seize them and reconfigures them in order to adapt to environmental changes. However, reconfiguration within BT is more focus on exploitation. In contrast, Sectra senses more opportunities, sizes them and reconfiguration within the company is more focus on exploration.
### Table 5.3 Comparative analysis of BT & Sectra

<table>
<thead>
<tr>
<th>Parameters</th>
<th>BT</th>
<th>Sectra</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exploration vs. Exploitation</strong></td>
<td>Exploitation-oriented</td>
<td>Exploration-oriented</td>
</tr>
<tr>
<td><strong>Market (environment)</strong></td>
<td>Moderately-dynamic environment</td>
<td>High-velocity environment</td>
</tr>
<tr>
<td><strong>External resources</strong></td>
<td>Consultancies</td>
<td>Consultancies</td>
</tr>
<tr>
<td></td>
<td>Alliances</td>
<td>Alliances</td>
</tr>
<tr>
<td></td>
<td>Acquisition</td>
<td>Acquisition</td>
</tr>
<tr>
<td></td>
<td>Outsource</td>
<td>Outsource</td>
</tr>
<tr>
<td><strong>Sequential vs. Parallel</strong></td>
<td>Sequential</td>
<td>Parallel</td>
</tr>
<tr>
<td><strong>Architectural(Structural) vs. Contextual</strong></td>
<td>Both</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Senior management behavior</strong></td>
<td>Less clear strategic intent</td>
<td>Clearly defined strategies</td>
</tr>
<tr>
<td></td>
<td>Shared vision and values</td>
<td>Shared vision and values</td>
</tr>
<tr>
<td></td>
<td>Task independency-Some degree of cooperation and participation</td>
<td>Task interdependency-High degree of cooperation and participation</td>
</tr>
<tr>
<td></td>
<td>Reward based on new ideas</td>
<td>Reward based on performance-highly fair</td>
</tr>
<tr>
<td><strong>Dynamic capabilities</strong></td>
<td>Normal Sensing activities</td>
<td>More Sensing activities</td>
</tr>
<tr>
<td></td>
<td>Seizing activities</td>
<td>Seizing activities</td>
</tr>
<tr>
<td></td>
<td>Reconfiguration with more focus on exploitation</td>
<td>Reconfiguration with more focus on exploration</td>
</tr>
</tbody>
</table>
Conclusion

The objective of this chapter is to present our research findings by connecting the research analysis to research questions in order to answer them. We will also suggest some areas for further research.
6. Conclusion

6.1. Answers to Research Questions

To conclude our research, we refer to the research purpose and questions in order to answer them based on our analysis. We brought up three research questions at the beginning of this thesis and reviewed the literature surrounding these questions. Then we employed our theoretical findings in a comparative empirical study to examine the situation of two Swedish companies regarding how they handle their exploitative and exploratory activities in two different market conditions. Now, we generalize our research findings by answering the questions as follows.

The first question concerns the options through which a company can be ambidextrous.

- **What are the possible options for companies to achieve organizational ambidexterity?**

Through our literature review, we found out four sets of options a firm can follow to realize ambidexterity including external vs. internal, sequential vs. parallel, structural vs. contextual, and attributes of senior management behavior. Our research shows that regardless of market conditions, companies can use both internal and external resources to achieve ambidexterity. External resources help companies handling the tensions caused by ambidexterity through taking them out of company. To do so, companies can use activities like acquisition, outsourcing, using consultancy, and alliance. These activities can be regarding both exploitation and exploration complementing the company’s internal resources.

Another set of options for achieving ambidexterity is sequential vs. parallel. In this regard, we realized that companies that are involved in high-velocity markets must achieve ambidexterity through parallel exercising of both exploitative and exploratory activities since the change pace is too high that they can ignore any kind of exploration for a while. On the other hand, for those companies that are working in a moderately-dynamic market, the best option to achieve ambidexterity is to follow exploitative and exploratory activities sequentially. It means that market conditions and change pace let them focusing sometimes on exploitation- and some other times on exploration-related activities. We can conclude that what is called as ambidextrous organizations are not necessarily those organizations that have exploration and exploitation at the same time to the same extent but those who are involved in both activities during their life cycle. In other words, Ambidexterity can achieve through both sequential and parallel attention to exploration and exploitation activities.

In addition, we found out that both architectural and contextual ambidexterity can be followed by companies at the same time and in every market condition. They act as complementary mechanisms through which companies can differentiate their subunits.
between their exploratory and exploitative activities and at the same time they create a context in which employees are involved in both exploitation and exploration.

Regarding the role of senior management, our study shows that companies in high-velocity markets have clearly defined strategies that indicate the ambition of the firm to achieve both short-term efficiency and long-term profitability and success. On the other hand, firms that have a moderately-dynamic environment have less degree of strategic intent; means their strategies do not clearly show their plan for both short- and long-term alignment and adaptation. However, senior managers at both market conditions share the company’s vision and values throughout the organization and have an integrating role for organizational subunits and employees. It seems that shared vision and values are prerequisite for achieving ambidexterity in any condition. In addition, in companies that are involved in high-velocity market there is a high degree of task interdependency between employees and subunits and, therefore, there are close cooperation and collaboration between people. Senior managers have a significant role in keeping and enhancing social integration within such companies. On the other hand, in companies in moderately-dynamic markets employees and subunits are more independent from each other and there is less cooperation and participation within the company; means that the degree of social integration in such companies is lower than that of companies in high-velocity markets. Another attribute of senior managers in ambidextrous organizations is their role in giving rewards to employees. Our study shows that at companies in moderately-dynamic market, reward is given mainly based on new ideas that employees bring while in companies that are involved in high-velocity markets, reward is given mainly based on the employees’ performance. In addition, the style of giving reward at companies in high-velocity markets is more fairly, more friendly, and more regularly while at companies in moderately-dynamic markets reward is given more occasionally. This different way in giving rewards can be explained. In other words, in companies that are more exploration-oriented, reward should keep and even increase the level of social integration and cooperation within the company and has more fairly characteristics. On the other hand, if companies are involved in a moderately-dynamic environment, rewards seem to have a role in encouraging people to take more innovative actions and to increase the amount of exploration at company.

The second question of our research is regarding the affect of market dynamism.

- **Does market dynamism (condition) affect the options through which companies achieve ambidexterity?**

In this thesis we distinguished two types of market dynamism: high-velocity markets and moderately-dynamic market. Our research shows that companies that are involved in a high-velocity environment are exploration-oriented while companies in a moderately-dynamic market are exploitation-oriented. As it is obvious in our answer to the first question, market conditions sometimes matter and sometimes do not matter for companies to follow a specific option to achieve ambidexterity. In following either sequential or parallel ambidexterity and in the role of senior management behavior in achieving ambidexterity, the type of market dynamism is influential. On the other hand, in following external or internal ambidexterity and structural or contextual ambidexterity, market conditions do not matter.
The third research question we came up with, concerns the role of dynamic capabilities.

- How an organization’s dynamic capabilities are related to the organizational ambidexterity?

In our theoretical review, we realized that dynamic capabilities contribute to the organizations achieving ambidexterity through their components including sensing, seizing and reconfiguration. We also found out that these three components should be considered together by firms in order to obtain a sustainable competitive advantage. Our study shows that companies in a high-velocity environment are mainly involved in sensing activities while firms in moderately-dynamic markets have a normal degree of sensing-related activities. Seizing activities are dependant on and resulting from sensing activities. Therefore, the degree of seizing capabilities at companies in moderately-dynamic markets cannot be higher than that of companies in high-velocity markets. Even though, it seems that companies in moderately-dynamic markets should have more seizing activities since they are exploitation-oriented. However, we can conclude that companies in a high-velocity environment focus more on sensing capabilities while companies in moderately-dynamic markets focus more on seizing capabilities. This conclusion is compatible with other findings of this research where we concluded that companies in high-velocity markets are exploration-oriented and those in moderately-dynamic markets are exploitation-oriented. It also fits with our argument about the options that companies follow to achieve ambidexterity depending on market dynamism.

In addition to above-mentioned argument, we can summarize some conclusions from our theoretical and empirical findings as follows.

- Externalization of resources via outsourcing or alliances will increase the likelihood of achieving ambidexterity.

- Companies in high-velocity markets follow parallel balancing between exploration and exploitation while in moderately-dynamic market they follow sequential balancing.

- In ambidextrous organizations, the organizational context is characterized as a highly supportive context that encourages individuals to push for ambitious goals.

- The presence of a clear strategic intent that validates the importance of both exploration- and exploitation-related activities increases the likelihood of ambidexterity.

- Building (sharing) the common vision and values throughout the organization increases the likelihood of ambidexterity.

- Dynamic capabilities result in ambidexterity through organizational processes that cause sensing and seizing in new resources and reconfiguring in existing resources.
6.2. Suggestion for Further Research

In our research, we found some areas interesting for further research. However, because of time and scope limitation in our research, we suggest them as areas that potentially can be the subject of future business research as follows.

- There are other options for realizing organizational ambidexterity that can be taken into account besides the options we provided in this thesis. One such option is achieving ambidexterity in individual vs. organizational level.

- We mentioned and, to some extent, clarified the relationship between dynamic capability and organizational ambidexterity. However, which organizational processes contribute to and enhance the components of dynamic capability; i.e. sensing, seizing and reconfiguration need more in-depth empirical research.

- We also found that components of dynamic capability; i.e. sensing, seizing and reconfiguration can be developed and supported by learning mechanisms through which knowledge is integrated within the organization. The contribution of leaning mechanisms to evolution of dynamic capabilities seems also interesting for more theoretical and empirical research.
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Primary sources (Interviews)


Håkansson Martin, Vice President Marketing in Medical Business unit, Sectra AB, April 13, 2010. Linköping, Sweden.


Secondary sources

- **Books:**


- **Articles:**


- **Reports**

- **Internet sources**
  Sectra home page: http://www.sectra.com
APPENDICES
Appendix I

Questionnaire to examine the level of ambidexterity

This questionnaire is designed to contribute to the empirical part of our master thesis on organizational ambidexterity at Linköping University. The concept of organizational ambidexterity refers to the conditions under which an organization is doing its routine, daily functions at the same time as targeting for new opportunities. The former is defined as exploitation and the latter is called as exploration. In other words, we want to examine how companies manage their exploratory and exploitative activities in different business units. In doing so, company can use either or both its internal and/or external resources. Internal resources refer to resources and capabilities within the organization whereas external resources are those obtained through external collaborations with other companies. In our first interview with the company we would like to ask some general questions about company, its history and background, its market and customers, its products and services, its vision and strategies, its technological shifts, the resources it uses and generally the company’s activities through its value chain from suppliers to customers as follows.

Thanks for your cooperation!

Sara Mirzataghi Chaharmahali
Amir Siadat

Open questions for discussion

- What are the history and structure of the company?
- Are works organized in shape of different projects or within functions/department inside each business unit? (Does the company have a functional or project-based structure?)
- Which markets and customers are targeted by the company?
- How you select your target customers and market?
- Does the company have a clearly defined vision and strategy? If so what are they and how they are defined?
- How does the collaboration between business units occur?
- How does company manage its value chain? (how to organize input for R&D, how to manage to have efficiency in different functions in the value chain)
- How do you distinguish customers’ needs and their changes?
- How suppliers’ innovation affect your product development?
- How does company react to technological and environmental changes?
- Has company had a big shift in its products/services/technologies/market since it was founded?
- How and where the resources of the company are supplied?(internal or external resources)
- How the employees interact with each other within the company? Are they interdependent or completely independent of each other? What is their level of skill and knowledge?
- How the knowledge and learning is transferred within the company?
- Is every business unit of the corporation doing both exploratory and exploitative activities at the same time or each business unit just doing either exploratory or exploitative activities?
# Appendix II: List of BT’s products

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand Pallet Trucks</td>
<td>BT Lifter, BT Lifter Silent, BT Lifter with scale, BT Lifter Stainless, BT Pro Lifter, BT Pro Lifter M, BT Ministacker, BT High Lifter, BT High Lifter Inox</td>
</tr>
<tr>
<td>Pallet Trucks</td>
<td>Minimover LWE130, Orion LPE200, Orion LPE200l, Orion LPE240, Stratos LSE200, Stratos LRE200, Levio LWE140, Levio LWE160, Levio LWE180, Levio LWE200, Levio LWE250, Stratos LRE300/LRE300T</td>
</tr>
<tr>
<td>Reach Trucks</td>
<td>Reflex M-series, BT Reflex RRE140-250, Reflex B-series, BT Reflex RRE 140E-250E, Reflex E-series, Reflex Cold Store Freflex</td>
</tr>
<tr>
<td>Order Picking Trucks</td>
<td>Ergomover Opus OSE100 / OSE100W, Opus OSE120 / OSE120P, Opus OSE120CB, Opus OSE180X / OSE180XP, Opus OSE250 / OSE250P, Opus OME100N / OME100NW, Opal OME100 / OME100M, Opal OME100W / OME100MW, OP 1000 SE/HSE, OPW 1200 SE/HSE</td>
</tr>
<tr>
<td>Tow Trucks</td>
<td>Ergomover, Unimover, BT Tow Truck TSE300</td>
</tr>
<tr>
<td>Very Narrow Aisle Trucks</td>
<td>Vector VCE100, Vector VCE135, Vector VCE150A, Vector VCE125ASF, Veflex VRE150, Veflex VRE125SF</td>
</tr>
<tr>
<td>Semi Automatic Trucks</td>
<td>Autopilot LAE240, Autopilot SAE140S, Autopilot SAE200, Radioshuttle</td>
</tr>
<tr>
<td>Forklifts (Diesel or Gas)</td>
<td>Cargo C4D/G150–200, Cargo C4D/G250-350, Cargo C4D400E-500E, Cargo GT/DT 1.5-3.5 ton</td>
</tr>
<tr>
<td>Forklifts (Electric)</td>
<td>Counterbalance Trucks Electric, Cargo E2 series, Cargo E4 series, Cargo E6 series, Cargo E8 series</td>
</tr>
</tbody>
</table>