R&D Investments in Family Firms

A Perspective of Swedish Family Firms

MASTER THESIS WITHIN: Business Administration
NUMBER OF CREDITS: 30 ECTS
PROGRAMME OF STUDY: Strategic Entrepreneurship
AUTHOR: Axel Finstorp and Ferdinand Padang
TUTOR: Hans Lundberg
JÖNKÖPING May 2016
Table of Contents

1 Introduction .......................................................................................................................... 1
  1.1 Background ...................................................................................................................... 1
  1.2 Problem discussion .......................................................................................................... 2
  1.3 Purpose & research questions ......................................................................................... 3
  1.4 Delimitations .................................................................................................................... 3

2 Frame of reference ............................................................................................................... 4
  2.1 Family ownership characteristics ...................................................................................... 4
  2.2 Investments in research and development (R&D) ............................................................. 5
  2.3 Family firms and R&D investments .................................................................................... 6
  2.4 Resource-based view ........................................................................................................ 7
  2.4.1 Family business resources ............................................................................................ 8
  2.5 Dynamic capabilities ........................................................................................................ 9
  2.6 Reflection on literature .................................................................................................... 11

3 Methodology ........................................................................................................................ 12
  3.1 Research philosophy ........................................................................................................ 12
  3.2 Research approach and strategy ....................................................................................... 12
  3.2.1 Case study as research strategy ..................................................................................... 13
  3.2.2 Time horizon ................................................................................................................ 14
  3.3 Research design and method ............................................................................................ 14
  3.3.1 Data collection ............................................................................................................. 14
  3.3.1.1 Semi-structured interview ......................................................................................... 15
  3.3.1.2 Factory visit and extended interviews ....................................................................... 17
  3.3.2 Data interpretation & analysis ..................................................................................... 17
  3.4 Research quality .............................................................................................................. 18
  3.4.1 Trustworthiness ........................................................................................................... 18
  3.5 Ethical considerations ........................................................................................................ 18

4 Empirical findings ............................................................................................................... 20
  4.1 Company A ...................................................................................................................... 20
  4.1.1 Interview with owner-CEO ......................................................................................... 20
  4.2 Company B ...................................................................................................................... 21
  4.2.1 Interview with owner-manager and R&D manager ....................................................... 22
  4.3 Company C ...................................................................................................................... 23
  4.3.1 Interview with owner-chairman ...................................................................................... 24
  4.4 Company D ...................................................................................................................... 24
  4.4.1 Interview with owner-chairman ...................................................................................... 25
  4.5 Company E ...................................................................................................................... 27
  4.5.1 Interview with owner-CEO ............................................................................................ 27
  4.6 Company F ...................................................................................................................... 28
  4.6.1 Interview with owner-CEO ............................................................................................ 29
  4.7 Summary of empirical findings ......................................................................................... 31

5 Analysis .................................................................................................................................. 33
  5.1 Resource-based view ........................................................................................................ 33
  5.2 Dynamic capabilities ........................................................................................................ 35
  5.3 R&D investments in family firms ...................................................................................... 36
6 Conclusion ........................................................................................................ 38
6.1 Contributions ............................................................................................. 38
6.2 Limitations ................................................................................................. 39
6.3 Further research ........................................................................................ 39

References .......................................................................................................... 40
Figures
Figure 1: Conceptual framework of R&D investments in family firms........ 11
Figure 2: Revised conceptual framework........................................... 37

Tables
Table 1 Company information................................................................. 15
Table 2 Interview details .................................................................. 16
Table 3 Factory visit and extended interview detail................................. 17
Table 4: Summary of findings RBV .................................................... 31
Table 5: Summary of findings DC ....................................................... 32

Appendices
Appendix 1: Definitions ..................................................................... 52
Appendix 2: Interview protocol ......................................................... 53
Appendix 3: Cross analysis table ........................................................ 55
Acknowledgement

First of all, we would like to thank our supervisor, Hans Lundberg, for his guidance during the development of our thesis. Secondly, we would like to thank our families and friends for their supports and motivation. We also extend our appreciation to all the respondents who were willing to participate in our study and provided us with knowledge and insights about family firms in Sweden. Furthermore, we send our gratitude to our seminar group for their constructive feedback which helped the improvement of our thesis. Eventually, Ferdinand personally thanks Swedish Institute (SI) for made his study in Sweden possible and also this publication has been produced during his SI scholarship period at Jönköping University.

Axel Finstorp & Ferdinand Padang
Jönköping, May 2016
Master’s Thesis in Strategic Entrepreneurship

Title: R&D Investments in Family Firms - A Perspective of Swedish Family Firms
Author: Axel Finstorp & Ferdinand Padang
Tutor: Hans Lundberg
Date: 2016-05-23
Subject terms: research & development investments, family firms, resource-based view, dynamic capabilities, swedish

Abstract

Problem: Several extant studies argue that family firm tend to invest less or even tend to avoid R&D investments, yet R&D investments are essential for sustaining competitive advantage of a firm as they facilitate innovation. Nevertheless, under certain circumstances family firms could also prefer R&D investments. Departing from these knowledge and drawing upon resource-based view & dynamic capabilities concepts, this thesis will explore how family firms perceive R&D investments, furthermore, it will investigate factors influencing R&D investments in family firms through an in-depth qualitative approach.

Purpose: To explore how family firms perceive R&D investments in the first place by utilizing Swedish family firms as the context which is aimed to provide a new viewpoint on R&D investments in family firms from an in-depth approach. Furthermore, the study extends to investigate factors which have influence on whether or not family firms undertake R&D investments.

Method: The study applies multiple case studies strategy with six cases in total and eight respondents. To support the study, semi-structured interview is used to collect the data, in addition to researcher’s note. The analysis of empirical findings comprises of two parts, firstly, the empirical findings are presented per case which are followed by the summary of findings from all cases at the end based on the theoretical lenses. Afterward, a cross-case analysis is conducted to observe emerging patterns which are used to further adapt the preliminary conceptual framework made from frame of references.

Conclusions: Family firms according to their views on R&D could be divided into two groups. The first group consists of the firms without a dedicated R&D focus or firms that perceive R&D as embedded activity, while the latter is the firms with dedicated R&D focus. According to the ways they perceive R&D, they subsequently put different emphasis on R&D investments. The first group is rather reactive toward R&D, while the latter group is more proactive. These differences could be explained by the internal and external influences (factors) which are found through the use of resource-based view and dynamic capabilities. The internal factors are specialization, organizational culture and family history, while the external ones are trends and competition. Trends and specialization are found in almost all cases, and they explain the early engagement (without dedicated focus) of R&D in the firms. However, unlike trends, specialization might potentially lead to negative propensity toward R&D investments because of the competitive advantage gained from being specialized and knowledgeable in certain area. However, when competition comes into play, it might shift the circumstance by encouraging the firm to leave its “comfort zone”, thus would encourage R&D endeavors, in particular R&D investments especially when the firm aims to lead in the market. Meanwhile, organizational culture could also be a catalyst for firms to focus on R&D, but it is very dependent on the culture instilled in the firm whether or not it would encourage R&D. Firms with risk aversion, as suggested by literature and also found in one of the cases would distance the firm from R&D investments. On the other hand, firms that show continuous learning and failure tolerating within their culture tend to put more focus on R&D. And the last one, family history, which is found in three cases suggest a positive influence toward R&D investments. The inventive behavior of the founder or former generations is implanted in the family history, and being preserved by the current generations as corporate identity or guiding values, of which contribute positively toward R&D investments in the firm.
1 Introduction

In the introduction, we elaborate the reasons of our research. This chapter is started with the background which is built from review of former studies within the topic of interest, and is followed by the identification of problem and potential research interest. Afterwards, we present our purpose of study as well as the research questions. Lastly, delimitations are presented in order to set a clear-cut scope of our thesis.

1.1 Background

Family ownership is the dominant form of ownership around the world (La Porta, Lopez-De-Silanes, & Shleifer, 1999; Miller & Le Breton-Miller, 2005). They range from the largest and most well-known companies in our society such as Cargill, Ferrero, Estée Lauder and Levi Strauss to the small local shop (Neubauer & Lank, 1998). Furthermore, family firms play an important role and contribute substantially to the economic growth in terms of GDP and employment around the world (Bjuggren, Johansson, & Sjögren, 2011; Gersick, Davis, Hampton, & Lansberg, 1997; Poza, 2009). Additionally, many listed firms worldwide are also in family control (Anderson & Reeb, 2003a; Sacristán-Navarro, Gómez-Ansón, & Cabeza-García, 2011). The economic impact and uniqueness of family firms have led to a growing interest in the field of family business research (Chrisman, Chua, & Sharma, 2005; Gedajlovic, Carney, Chrisman, & Kellermanns, 2012). Habbershon & Pistrui (2002) note that a majority of research in the family business field has emphasized areas such as the role of the family, succession and business continuity whereas little attention has been from an enterprising point of view. However, the private nature of many family owned firms has made it hard to access precise information and thereby also the economic impact as economic contributors (Astrachan & Shanker, 2003; Villalonga & Amit, 2006). Because of the limited availability of data, previous research have mainly focused on listed companies (Bjuggren et al., 2011).

The involvement of family members in the business makes these firms different from other firms (Chua, Chrisman, & Sharma, 1999; Habbershon & Williams, 1999). The interaction and overlap between the family and the firm create a unique organizational form with certain characteristics relative to other firms (Chrisman, Chua, & Steier, 2005). Risk-aversion and long-term orientation are two characteristics which are often associated with family ownership (Schmid, Achleitner, Ampenberger, & Kaserer, 2014). Furthermore, striving for non-financial goals is a common characteristics among family firms which is often emphasized among family business researchers (Zellweger, Nason, Nordqvist, & Brush, 2013). The emotional attachment in the family business is likely to influence their behavior and goals, thus may differ from non-family firms’ objective business logic (Ward, 2011). Chrisman, Chua, De Massis, Frattini, & Wright (2015) suggest that many family firms do not follow what is often claimed to be rational models of firm behavior. Instead, the combination of financial and non-financial goals create a different type of rationale which applies to many family firms.

Meanwhile, despite of their focus on non-financial goals family firms cannot fully neglect the importance of financial goals as a means to accomplish the non-financial ones (Brundin, Samuelsson, & Melin, 2014). Hence, family firms also need to be competitive at the same time and this is the point where innovation, one of the necessary factors to achieve such financial goals, comes into play (Nieto, Santamaria, & Fernandez, 2015). In recent years there has been an increase of interest in researching innovation within the family business context (De Massis, Frattini, & Lichtenthaler, 2013; Hoy & Sharma, 2010; Schmieder, 2014). Interestingly, the paradox between financial and non-financial goals seemed to play an influential role on the innovation process of family firms (Schuman, Stutz, & Ward, 2010). Nonetheless, innovation is a gigantic field, hence, we are interested to narrow the discussion to research and development (R&D) as a way of facilitating innovation (Ettlie, 1998).

For many industries, R&D investments are crucial in order to stay competitive, to accumulate market capabilities and to advance innovation. In addition, R&D is an important part of the
innovation management process which includes activities that generate new knowledge to be turned into new products and services for the markets (Chiesa, 2001). Therefore, we could argue that R&D is a facilitator for innovative outcomes, and this type of investment is widely considered as key factor in terms of gaining and sustaining competitive advantages (Ettlie, 1998). However, to speak about R&D in family firms, we cannot separate it from the characteristics of family firms as a business organization. As family business literature suggests, family firms are different relative to the other types of organization ownership (Poza, 2009). The aforementioned characteristics could be important to take into account for understanding R&D decisions in family firms.

1.2 Problem discussion

A recent stream of research has started to investigate the relationship between firm structure (family ownership) and R&D decisions. As mentioned in the introduction, empirical studies in the field of family business suggest that there are differences between family vs non-family firms. Within the topic of R&D investments, many of the previous research indicate that family owned firms have a tendency to invest less than other firms or have a negative relation with R&D investment e.g. De Massis, Frattini & Lichteenthaler (2013), etc. (see section 2.3). Given the fact that family owned businesses around the world play a significant role in our economy (La Porta et al., 1999) and the aforementioned argument that R&D investments are an important input for competitive advantages, we therefore argue that the discussion of R&D investments in family firms is highly relevant.

Additionally, some other studies on R&D in family firms reveal that family firms could also favor R&D investment e.g. Chrisman and Patel (2012), Craig & Moores (2006) which we further consider that this duality makes the topic even more interesting to be studied. Furthermore, some scholars through several different theoretical lenses have attempted to examine and explain about the phenomenon i.e. R&D investments in family firms, for instances socioemotional wealth (Sciascia, Nordqvist, Mazzola, & De Massis, 2015), behavioral agency model and myopic loss aversion (Chrisman & Patel, 2012), agency theory (Block, 2012; Munari, Oriani, & Sobrero, 2010), board independence (Chen & Hsu, 2009) and growth opportunities (Choi, Zahra, Yoshikawa, & Han, 2015). However, the majority of these former research used a quantitative research method in examining the relationship between family firms and R&D investments. Therefore, there is only a little in-depth knowledge available for explaining the phenomenon.

Departing from this lack of in-depth knowledge, this study sets out to investigate how family owners actually perceive this type of investment, R&D. To support the study, we are going to employ the resource-based view (RBV) and dynamic capabilities (DC) as our theoretical lenses. RBV which puts emphasis on firm-specific internal resources could bring up the unique resources of family firms, of which are very important for R&D as we cannot separate R&D from firm’s resources (see further in section 2.4 and 2.4.1). Meanwhile, dynamic capabilities which focuses on firm’s ability to recombine its resource base in a dynamic context would enable us to observe firm’s activities in capturing external resources which are also essential for R&D (see further in section 2.5). Through the use of these lenses we are able to observe family firms as unique entity which has been described as distinct from non-family firms (Habbershon, Williams, & MacMillan, 2003; Sirmon & Hitt, 2003), of which we are interested to explore in regard to R&D investments with a qualitative approach.
1.3 Purpose & research questions

From the aforementioned differences of propensities which family firms have toward R&D investments, our research embarks to explore how family firms perceive R&D investments in the first place by utilizing Swedish family firms as the context which is aimed to provide a new viewpoint on R&D investments in family firms from an in-depth approach. Furthermore, we will extend the study to investigate factors which have influence on whether or not family firms undertake R&D investments. Therefore, to assist the research process we develop the following research questions as a reflection of the purpose,

1. How do family firms perceive R&D investments?
2. What factors influence family firms on whether to undertake R&D investments or not?

1.4 Delimitations

The emphasis of the study will be on exploring how family firms perceive R&D investments, and capturing any influential factors of why they invest or not in R&D. We will not discuss the topic of firm’s performance in regard to R&D investments further than a part of our literature review. Also, we exclude financial measurement of R&D investments. Additionally, we give attention solely to family firms, thus do not aim for making a comparison with non-family firms.
2 Frame of reference

In the frame of reference, we display our review of literature as well as our theories. We start this chapter with family ownership characteristics which are followed by a discussion of R&D investments in general. Then we present the extant studies about R&D investments in family firms. Eventually, we show the theories used later in our analysis chapter, which are resource-based view and dynamic capabilities.

2.1 Family ownership characteristics

The combination between a family and business system creates a unique organizational form (Gersick et al., 1997). Naldi, Nordqvist, Sjöberg & Wiklund, (2007, p.34) refer to family firms as “contextual hybrids” because of the overlap between these two systems. Family members often have a personal stake in the firm that creates a sense of pride and independence which make the family business unique (Arregle, Hitt, Sirmon, & Very, 2007). The fact that family members hold a large amount of equity in the firm creates a stable ownership structure (Lee, 2006) and many of these firms seek to pass on the firm for future generations (Casson, 1999; Gersick et al., 1997). Because of the stability in ownership and power, family firms are likely to find it unattractive to prioritize short-term goals as it may jeopardize the continuity and success of the business over time (Kets de Vries, 1993). Family firms are often considered to possess a longer term orientation relative to other firms (Brigham, Lumpkin, Payne, & Zachary, 2014; Miller & Le Breton-Miller, 2005; Zellweger, 2007). The autonomy in privately held family firms reduce the short-term pressure from the stock market faced by listed companies (Kets de Vries, 1993). Moreover, Zahra (2004, p.367) notes that “family members might also worry about the loss of their inheritance, pressuring managers and employees to downplay long-term value creating activities.”

The strategic nature of family firms is widely regarded as conservative and risk-averse (Bertrand & Schoar, 2006; Hiebl, 2012; Naldi, Nordqvist, Sjöberg, & Wiklund, 2007). Family owners tend to be less diversified than other investor (Anderson & Reeb, 2003b) and their risk-aversion is therefore likely to be higher compared to other ownership structures because of their large amount of wealth invested in one asset (Bianco, Bontempi, Golinelli, & Parigi, 2013). Shareholders with a well-diversified portfolio are likely to view risk differently than family owners (Anderson, Duru, & Reeb, 2012). González, Guzmán, Pombo & Trujillo (2013) note that firms with family directors tend to be more risk-averse than firms with non-family managers. Family firms with external CEO have been suggested to behave differently from firms with a family member as CEO (Miller, Le Breton-Miller, Minichilli, Corbetta, & Pittino, 2014). However, Hiebl (2012) calls this general assumption about risk-aversion into question and suggests that family firms’ propensity to be risk-averse is highly dependent on the situation which may lead to riskier decisions in order to secure control and longevity of the firm. Interestingly, due to their unique characteristics, family firms often face paradoxes such as balancing traditions from the past while keeping up with innovation and change, or the question of family liquidity versus business growth (Schuman et al., 2010).

In addition to financial objectives, family owners are known to value non-financial goals such as responsibility, identity and social status (Zellweger & Astrachan, 2008; Zellweger et al., 2013). Chrisman, Chua, Pearson & Barnett (2012) argue that the diverse set of goals influences the strategic behavior of family firms. Based on a study with Spanish SMEs, Gomez-Mejia, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes (2007) question the notion that family firms are risk-averse and suggest that family firms are willing to accept a higher risk if it increases the socioemotional wealth. Gomez-Mejia et al. (2007, p.106) describe socioemotional wealth as “non-financial aspects of the firm that meet the family’s affective needs, such as identity, the ability to exercise family influence, and the perpetuation of the family dynasty”. The behavior of family firms is likely to be influenced by a desire to protect the socioemotional wealth (Berrone, Cruz, Gomez-Mejia, & Larraza-Kintana, 2010).

Zellweger and Dehlen (2012) build on the socioemotional wealth concept and affective value related to corporate ownership and suggest that family businesses’ behavior is influenced by the degree of overlap between the owner’s wealth and firm equity in order to protect their
socioemotional wealth. Brundin et al. (2014) include some of the aforementioned emotional peculiarities in what they call the ‘family ownership logic’ which influences the managerial practices of these firms and differs from the classical profit or value maximization logic.

2.2 Investments in research and development (R&D)

The term research and development (R&D) has evolved over a long time (Akhilesh, 2014). R&D spending is often described as a necessary input for innovation activities (Adams, Bessant, & Phelps, 2006). For that matter, this types of investments are often planned and encouraged at a state and national level as it represents an important component for the success of nations (Akhilesh, 2014). The decision to invest in R&D tends to be influenced by a firm’s corporate strategy (Baysinger & Hoskisson, 1989) and the business sector it operates in (Scherer, 1984). A common measure of R&D intensity is the ratio of a firm’s R&D expenditures to sales during a given period of time (Chrisman & Patel, 2012). The number of patents or the introduction of new products and processes are frequently used as measures on R&D outputs (Hagedoorn & Cloodt, 2003).

Investments in research and development (R&D) are often described as essential activities for firms to stay competitive and derive new products and services (Block, 2012; Kor, 2006). R&D strategy is a way for companies to enter new markets alternatively strengthen their current product-market position (Alessandri & Pattit, 2014). Investments in new product development and processes are often drivers for future success (Barker & Mueller, 2002). Such activities are expected to generate long-term performance and competitive advantages to the firm (Ettlie, 1998). Over the last decades, certain departments for R&D have emerged as an important business function for many companies around the world (Akhilesh, 2014). Although R&D spending is widely used synonymous with innovation, many firms introduce new products and processes without such investments. According to Nieto, Santamaría & Fernandez (2015, p.385), “R&D investment has a dual role: on the one hand it makes it possible to generate new knowledge, whereas on the other hand it enhances the firm’s ability to identify, assimilate, and exploit existing information”. In line with that statement, Fey and Birkinshaw (2005, p. 600) argue that “innovation occurs primarily through new combinations of resources, ideas, and technologies, a fertile R&D environment relies on a constant inflow of knowledge from other places”.

Despite the importance of R&D for gaining and sustaining competitive advantages, firms differ in their commitment to financial resources (Kor, 2006). Investments in R&D have a number of characteristics that make them different from other investments. R&D projects are associated with a high degree of uncertainty (Hall, 2002). R&D activities are often time-consuming and involve a large amount of resource commitment (Kor, 2006). This type of investment requires large sunk costs and this is one reason many firms find it difficult to finance (Hall, 2002). Financing constraints are main factors which are likely to affect the decision to follow R&D strategies (Millet-Reyes, 2004). Some R&D investments may pay off in a foreseeable future while other are expected to turn into profit after many years (Kim, Kim, & Lee, 2008). Because of uncertain outcomes, investments in R&D are typically characterized as risky and they require a high degree of trust and understanding within the organization (Kor, 2006). The unpredictable outcomes also have complications from an external point of view, many financiers find it hard to assess the future rewards from R&D. This is a reason why many companies find it difficult to attract outside capital for this type of investments (Millet-Reyes, 2004). One term that is often associated with investments in R&D is ‘financial slack’. The term refers to a capital structure which allows for uncommitted excess resources (Kim et al., 2008). Financial slack provides firms with a degree of freedom which creates a better position to undertake R&D (Ashwin, Krishnan, & George, 2016), this eases resource constraints by ensuring a continuous source of necessary funds (O’Brien, 2003).

Furthermore, knowledge and learning are important components in order to create and develop competitive advantages (Bettis & Hitt, 1995). R&D projects are knowledge intensive thus require a high level of qualified employees (Chen & Hsu, 2009). Many companies face a challenge to attract and retain skilled workers within the organization (Akhilesh, 2014). An organizational mindset to explore new things is likely to influence the birth of new inventions and discoveries (Shirahada & Hamazaki, 2013). Career experience and knowledge of the management team are other factors which are likely to have a positive impact on R&D endeavors (Barker & Mueller,
Although many firms prefer to build up this knowledge base internally, Bessant and Rush (1995) suggest that most firms will reach a point where they have to look for external competences in order to improve the input process. In recent years, what is known as ‘open innovation’ has emerged as a paradigm shift in how companies approach innovation. In contrast to a closed model to innovation which relies on companies own resources, an open innovation model refers to an approach where companies to a larger extent make use of external sources to advance in innovation and also let other companies make use of their ideas to a larger extent (Morris, 2011). Because of the large amount of money and knowledge needed for this type of investment, a growing number of strategic agreements to cooperate in R&D projects with suppliers, customers, academic institution or even competitors have emerged (Tether, 2002). The access to complementary resources and the minimization of transaction cost is a common motive for firm’s decision to participate in R&D cooperation (Miotti & Sachwald, 2003).

2.3 Family firms and R&D investments

The characteristics of family-owned businesses may influence their decision on R&D endeavors (Nieto et al., 2015). The risky and uncertain nature of R&D investments call for a risk-taking behavior which is not a typical attitude in family firms (Block, 2012). Family firms are likely to avoid risky strategies such as those associated with R&D activities in order to preserve financial wealth and stability (Schulze, Lubatkin, & Dino, 2002). Family firms in particular face a balancing act in terms of family control, shareholder liquidity and capital needed to finance future growth (Visscher, 2011). Risk-aversion and fear of losing control are likely to influence the corporate capital structure (Bertrand & Schoar, 2006). Family firms are less likely to use equity financing compared to non-family firms because of the diluting effect on the ownership (Pindado, Requejo, & de la Torre, 2015). Capital constraints limit the resources needed for R&D activities (Hall, 2002). González et al., (2013) suggest that the tradeoff between financing growth without losing control pushes family firms to use debt capital. In order to keep family control, family firms tend to favor investments in low-risk projects instead of R&D investments in projects with uncertain outcomes (Croci, Doukas, & Gonenc, 2011). Moreover, family firms tend to favor investments in physical assets rather than R&D projects (Anderson et al., 2012).

Although family firms tend to be risk-averse, family ownership is often associated with a long-term orientation which is required for this kind of investments (Miller & Le Breton-Miller, 2005). The long-term horizon indicates that family ownership is more likely to support this type of investments (Zellweger, 2007). Risk-aversion is likely to influence R&D spending negatively whereas the long-time horizon should support this type of investments (Chrisman, Chua, De Massis, Frattini, & Wright, 2015). Chrisman, Chua, De Massis, Frattini and Wright (2015) refer to this as the ability and willingness paradox in family firms. Ability is defined as “family owners discretion to direct, allocate, add to, or dispose of a firm’s resources” whereas willingness is defined as the “disposition of the family owners to engage in idiosyncratic behavior based on the goals, intentions, and motivations that drive the owners to influence the firm’s behavior” (Chrisman et al., 2015, p. 311). Zellweger and Dehlen (2012) argue that family firms’ propensity to be risk-averse is dependent on the overlap between family wealth and firm equity. This is in line with findings in Lumpkin, Brigham & Moss (2010, p.242) who note that “FCBs with a strong inclination to preserve wealth may be unwilling to invest in R&D projects with uncertain outcomes or risk capital to expand operations”. Other scholars suggest that family firms become
more risk-averse and conservative over time and show a negative relationship between the ages of the firm and focus on innovation (Zahra, 2005). Sirmon & Hitt (2003) argue that hiring practices with a bias towards family members could restrict the inflow of new knowledge and thereby limit the value creation process. Similarly, Nieto, Santamaria & Fernandez (2015) suggest that family firms are less likely to search for external sources such as collaborations and alliances for R&D projects and prefer to keep this activities in-house.

However, family business literature is generally consistent with the fact that family ownership is negatively associated with R&D expenditures (De Massis et al., 2013). Family firms tend to underinvest in R&D relative to other firms (Block, 2012; Chrisman & Patel, 2012). In a sample of 154 companies in R&D intensive industries belonging to S&P 500, Block (2012) finds a negative relationship between family ownership and R&D spending. Similarly, in a sample with 369 Taiwanese high-tech firms, Chen & Hsu (2009) point out a negative relationship and suggest that family ownership may discourage R&D initiatives. Using a sample of 1000 publicly traded firms across Europe, Munari, Oriani & Sobrero (2010) conclude that higher family shareholding corresponds negatively with the level of firms’ R&D investment. In a longitudinal study of South Korean manufacturing firms, Choi, Zahra, Yoshikawa & Han (2015) show that family ownership influence spending on R&D negatively. In the context of Canadian publicly held family firms, Muñoz-Bullón and Sanchez-Bueno (2011) find a significantly lower level of R&D intensity relative to non-family firms. Additionally, in a study of 240 Italian small- and medium-sized firms, Sciascia, Nordqvist, Mazzola & De Massis (2015) confirm this negative relationship and suggest that the degree of overlap between family wealth and firm equity correlate negatively with the level of R&D intensity.

Chrisman & Patel (2012) question this general assumption and show that the decision to invest in R&D is associated with economic performance. Family firms tend to invest more than non-family firms in times when performance is below aspirational levels (Chrisman & Patel, 2012). Chen & Hsu (2009) suggest that this negative relationship could be a result of more efficient spending in firms with high ownership and therefore show lower level of R&D intensity. Craig and Moores (2006) argue that less centralization and informal structure within family firms may in fact be positively related to innovation efforts. Additionally, Schmid et al. (2014) stress that most previous research is conducted based on listed firms but the private nature of family business may have an impact on the disclosure on R&D spending because of the possibility to incorporate these numbers into general accounts. Classen, Carree, Van Gils & Peters (2013, p.596) argue that “findings from studies on large and public family firms are hardly transferable to family SMEs” and call for further research in the context of SMEs. Nieto, Santamaria & Fernandez (2015) suggest that family businesses are not necessarily less innovative relative other businesses but these firms tend to favor an incremental approach to innovation which fits better with their preferences. Incremental steps to innovation are associated with lower risk and a steady improvement of the existing offering (Schmieder, 2014).

2.4 Resource-based view

The resource-based view (RBV) is a framework commonly used as a tool to assess strategic assets of a firm (Barney, 1991). Wernerfelt (1984) made one the first contributions to the modern RBV by shifting the focus to firm-specific resources instead of the product market. RBV has also been used to explain differences in performance across firms which cannot be explained by simply looking at the industry or the state of the economy (Habbershon & Williams, 1999). RBV has been a popular choice for scholars because of the focus on internal capabilities and the exploitation of firm-specific resources (Hansson, 2015). The resource-based view has also been recognized as an appropriate perspective for researchers in the field of family business (Habbershon & Williams, 1999). One reason for the popularity in that context is that RBV stress the complex dynamics and richness of intangible assets in family firms (Cabrera-Suárez, De Saá-Pérez, & García-Almeida, 2001).

The RBV suggests that firm performance is a result of internal resources (Penrose, 1959). Wernerfelt (1984, p.172) defines resources as “those (tangible and intangible) assets which are tied semi permanently to the firm”, such resources could consist of brand names, in-house knowledge of technology, qualified workers, trade contracts, machinery, capital etc. A capability is defined by Makadok (2001, p. 389) as “a special type of resource- specifically, an
organizationally embedded nontransferable firm-specific resource whose purpose is to improve the productivity of the other resources possessed by the firm.”

Barney (1991) emphasizes that resources are heterogeneously distributed across firms, and he suggests that a sustained competitive advantage can be achieved by bringing together resources which are valuable, rare, inimitable and non-substitutable (so called VRIN attributes). RBV is therefore used as a framework to describe how idiosyncratic and immobile resources are used to build a competitive advantage (Habbershon & Williams, 1999). RBV sees each firm as idiosyncratic because firm-specific resources are unique and no companies can have exactly the same experiences, assets, skills and competences or organizational culture (Collis & Montgomery, 1995). Resources which are rare and imperfectly mobile are hard for competitors to obtain (Barney, 1991). For example a company's history with its customers and the trust that has been built up over time are likely to influence the competitive advantage of a firm which is hardly accessible and hard for competitors to copy (Dierickx & Cool, 1989). A firm’s bundle of resources and capabilities are a result of the strategic commitment and accumulation of assets over a period of time which cannot easily be acquired in strategic factor markets (Dierickx & Cool, 1989).

Capital investment into research and development is an important source to achieve a competitive advantage (Lai, Lin, & Lin, 2015). A corporate R&D department can be an important place where valuable resources are built up over time (Collis & Montgomery, 1995). Intangible assets such as human capital are often necessary to obtain a competitive advantage (Barney, 1991). Know-how which is hard to transfer and replicate is required to sustain a competitive advantage (Grant, 1996). For example firm’s reputational assets are example of intangible assets which are built up internally and hard to transfer to another company (Teece, Pisano, & Shuen, 1997). Galende and De La Fuente (2003) suggest that internal resources and factors such as technological knowledge and experience are main determinants for a firm’s R&D activities. Intra-organizational knowledge transfer through interactions involving people from different departments is an important basis for the competitive advantage of firms (Argote & Ingram, 2000). Internal knowledge and experience are often context specific and problematic to transfer and may not fit a new context (Argote & Ingram, 2000). Moreover, Lai, Lin & Lin (2015) identify that a firm’s R&D decisions are a function of internal and controllable assets such as tangible, intangible and financial resources. Firms with a history of successful breakthroughs and a high level of initial know-how are in a good position to further embrace and develop fruitful R&D projects (Dierickx & Cool, 1989).

2.4.1 Family business resources

Regardless of organizational type, resources in all firms must be managed effectively to achieve a competitive advantage (Sirmon & Hitt, 2003). In order to apply a resource based perspective on family firms, the question whether these organizations are different from other businesses is highly relevant (Rau, 2014). One fundamental difference relative other firms is the family’s influence on decision making (Chrisman, Chua, & Steier, 2005). The family component is likely to influence and shape the business (Chua et al., 1999). Previous research on family firms suggest that family-owned firms possess a certain bundle of resources and capabilities which contributes positively to their business success (Tokarczyk, Hansen, Green, & Down, 2007). Some of these distinctive resources derive from the commitment and trust that is commonly found in family firms (Cabrera-Suárez et al., 2001).

Because of the focus on internal resources and capabilities, RBV has been frequently used in the topic of family business (Hansson, 2015). Previous research suggest that the specific resources and attributes of family ownership can create organizational competitive advantages (Habbershon & Williams, 1999; Sirmon & Hitt, 2003). Family interactions and involvement create a collection of resources and capabilities unique to the family business which contribute positively to the value creation process (Chrisman, Chua, & Litz, 2003; Habbershon et al., 2003). The fact that many family firms are owner-managed is likely to lead to advantages as a result of efficient monitoring mechanisms, quick decision making and longer time horizon to evaluate firm performance (Poza, 2009).
A common concept in family business research which is connected to the RBV is the concept of familiness (Hansson, 2015). Habbershon and Williams (1999) introduce the notion of ‘Familiness’ as a result of family influence. Habbershon and Williams (1999, p. 11) define familiness as “the unique bundle of resources a particular firm has because of the systems interactions between the family, its individual members, and the business”. Familiness is described as a positive factor for wealth creation and this is perceived as a source to potential advantages specific to the context of family firms (Pearson, Carr, & Shaw, 2008). Resources which are closely tied to a distinctive familiness should have a high level of heterogeneity and immobility to be a source of competitive advantage (Hansson, 2015). Moreover, Habbershon and Williams (1999) suggest that the family’s involvement will lead to distinctive familiness, this is referred to a bundle of positive factors influencing the potential to a competitive advantage. Sirmon and Hitt (2003) identify human capital, social capital, patient capital, survivability capital and governance structure as resources which can lead to competitive advantages in family firms. Zellweger (2007) emphasizes the importance of patient capital and commitment in family firms relative other firms which allow for postponement of gains. Visscher (2011, p.16) describes patient capital as “equity provided by family business owners who are willing to balance the current return on their business investment with the merits of a well-crafted, long-term strategy and continuation of the family tradition and heritage.”

Barney (1991) suggests that a strong firm culture can be a source of distinct competitive advantage. Organizational culture in family firms is a resource which is hard for competitors to imitate (Diericks & Cool, 1989). Furthermore, Zahra, Hayton and Salvato (2004) suggest that an organizational culture that possesses a collaborative behavior is better positioned to identify and pursue market opportunities. A business culture that embraces and values new knowledge from outside is more likely to support entrepreneurial efforts (Zahra, Hayton, & Salvato, 2004). Family members are often brought up in close connection to the business and this creates a deep understanding and firm-specific tacit-knowledge which may lead to a competitive edge (Chirico & Nordqvist, 2010). Knowledge and skills are often passed on to the next generation, this is another potential source of competitive advantage unique to family firms (Poza, 2009). Poza (2009) argues that a strong desire to protect the reputation of the family name is likely to influence the commitment to high quality goods.

However, the above described concept of familiness and related factors such as lack of professionalism and scarcity of financial resources may in fact constrain competitiveness and lead to negative outcomes (Rau, 2014). The presence of managerial and financial constraints in family firms may discourage the achievement of competitive advantages (Carney, 2005). Several scholars suggest that family firms tend to be very cautious about their financial resources (D. Miller & Le Breton-Miller, 2005; Poza, 2009). Ward (2004) highlights financial constraints in privately held firms and a fear of losing ownership as competitive disadvantages compared to non-family firms. Moreover, Ward (2011) mentions a strong path-dependence and ineffectiveness in delegating managerial tasks as potential disadvantages in family firms. Bertrand and Schoar (2006) suggest that the propensity to conservative behavior and unwillingness to change may become a disadvantage for these firms. In his seminal work about corporate governance and competitive advantages, Carney (2005) describes three propensities which may lead or inhibit family firm’s competitive advantage, namely ‘parsimony’, ‘personalism’ and ‘particularism’. Family firms’ propensity for parsimony refers to a careful resource allocation and an inclination to follow wealth preservation strategies. Personalism focuses on the authority of the family as a result from the concentrated ownership and control which leads to fewer operational constraints. Particularism is related to personalism and describes a situation which allows owner-managers to act under greater liberty when it comes to exercising authority.

### 2.5 Dynamic capabilities

Although appropriate resources are necessary to build a competitive advantage, organizations need the capability of turning those resources into a competitive advantage (Ray, Barney, & Muhanna, 2004). Similar to the RBV, the dynamic capabilities focuses on a firm’s tangible and intangible resources as a way to achieve a competitive advantage (Teece et al., 1997). However, a
firm that holds valuable, rare, inimitable and non-substitutable resource is not automatically in a sufficient position to sustain a competitive advantage (Cabrera-Suárez et al., 2001). In contrast to a static environment which RBV applies to, dynamic capabilities relates to a dynamic environment and focuses on a firm’s ability to accumulate and exploit internal and external resources to fit in the dynamic landscape that most companies exist in today (Chirico & Nordqvist, 2010). Eisenhardt and Martin (2000, p.1106) describe the concept of dynamic capabilities as “specific strategic and organizational processes like product development, alliancing, and strategic decision making that create value for firms within dynamic markets by manipulating resources into new value-creating strategies”. In a dynamic market, companies have to encourage change and renewal in order to survive (Eisenhardt & Martin, 2000).

Teece et al. (1997) argue that physical assets such as a firm’s manufacturing plants, equipment can easily be bought whereas assets needed to achieve a competitive advantage are not reflected in the balance sheet. Furthermore, Teece et al. (1997) suggest that a global competition calls for a concept which analyzes how firms are building up their assets and the importance of the management to adapt and bringing together internal and external competences. In his further work, Teece (2007) breaks dynamic capabilities down into three parts which are ‘sensing opportunities and threat’, ‘seizing opportunities’ and ‘managing threats and reconfiguration’. The activity of sensing is not limited to only “investment in research activity, the probing and re-probing of customer needs and technological possibilities”, but also includes “understanding latent demand, the structural evolution of industries, markets, and likely supplier and competitor responses” (Teece, 2007, p. 1322). Hence, the key role of management according to this view is to find new value creating strategies through a recombination of resources to stay competitive in an environment of rapid change (Chirico & Nordqvist, 2010). Whereas the traditional resource-based thinking has focused on the exploitation of resources which are firm-specific, dynamic capabilities shed light on a firm’s ability to renew competences to match a changing environment (Teece et al., 1997).

A dynamic capability and difficult-to-imitate competence must be built up and cannot easily be bought in the market, R&D management and product development are important areas for wealth creation which firms have to address in changing environments (Teece et al., 1997). A firm’s ability to pursue an R&D strategy is a result of managerial attention to capability-building and resource-picking (Makadok, 2001). A simultaneous process of building and exploiting a firm’s core competences is fundamental to sustain a competitive advantage (Cohen & Levinthal, 1990).

Knowledge has emerged as one of the most central resources to enable organizations to establish a competitive advantage in a dynamic landscape (Grant, 1996). Knowledge is an intangible asset that works as a strong driver to sustain a competitive advantage (Grant, 1996). Firms with a distinctive set of knowledge assets are better positioned to be innovative and compete because of a greater ability to successfully recombine and manipulate their resources (Eisenhardt & Martin, 2000). Organizational learning is also described as one of the most distinctive processes which influences firms’ ability to identify new business opportunities and develop existing products (Teece et al., 1997). According to Cohen and Levinthal (1990), scientific and technological knowledge are intangible resources which are needed in order to develop a capacity to absorb outside knowledge to the firm. They describe the concept of absorptive capacity as the “ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends” (Cohen & Levinthal, 1990, p. 128). Related to R&D, an absorptive capacity allows internal R&D functions to absorb external knowledge and integrate this knowledge into the firm’s own processes (Del Canto & González, 1999). R&D investments can contribute positively to the assimilation of new knowledge by combining internal and external competences and this is especially important in a dynamic environment (Teece et al., 1997). Chirico and Nordqvist (2010) are among the first scholars to apply the lens of dynamic capabilities the context of family firms. In their article, they examine how value creation is generated across generations and the researchers identifies organizational culture as key facilitator for the resource-recombination process in family firms.
2.6 Reflection on literature

As a summary of this chapter we try to highlight the key concepts that will be put into use for the analysis in later chapter. Firstly, we perceive that R&D investments in family firms is a phenomenon resulted by both internal and external influences. Therefore, we will utilize two aforementioned theories as our lens to explore the phenomenon. The resource-based view will assist the analysis to explore internal influences, both family and non-family, on R&D investments as it put emphasis on identifying firm specific resources. Meanwhile, to explore the external influence on R&D investments we will employ dynamic capabilities. By using the three capacities of dynamic capabilities which are capacity to sense opportunities and threats, to seize opportunities and to manage threats and reconfiguration (Teece, 2007), we will highlight the firm’s activities toward external environment. Accordingly, we will be able to investigate the emerging factors from the highlighted activities. The following conceptual framework sums it up,

Figure 1: Conceptual framework of R&D investments in family firms (source: own)
In this chapter, we bring the discussion about the methodology used in the study which consists of research philosophy in the beginning then followed by research approach and strategy, and eventually the presentation of research design and method. In the discussion, we always take both the research questions and the purpose of the study into consideration since they both are essential in determining the choice of particular stances or approach.

3.1 Research philosophy

Eriksson & Kovalainen (2008) argue that it is possible to conduct a qualitative business research without having a deep understanding in the concept of philosophy of social science, however, they still suggest it would be beneficial for the researcher in designing a solid study. Hence, we see the importance and the needs for some elaboration regarding research philosophy which we will end with a presentation of our choice of research philosophy. In research philosophy there are two terminologies which are commonly known among researchers which are ontology and epistemology where ontology simply focuses on ‘reality’, while epistemology focuses on the relation between the reality and the researcher (Carson, Gilmore, Perry, & Gronhaug, 2001). Further speaking of ontology, the researcher usually encounters two different stances which are known as objectivism and subjectivism. An Objectivist, a researcher adopting objectivism, perceives that reality exists independently, while a subjectivist, a researcher adopting subjectivism, perceives that reality is produced by social interaction of social actor. These stances in ontology are closely associated with the positions in epistemology where in this study we only present two of them which are positivism and interpretivist for the purpose of simplicity without any means of omitting the importance of the rest. Positivism in epistemology perceives that the reality (or knowledge) can be observed like a material thing and the observer is independent thus it supports the objectivism of ontology (Carson et al., 2001). Meanwhile, interpretivist perceives that the reality (or knowledge) is available through the eyes of social actors which make it closely connected with the subjectivism of ontology (Eriksson & Kovalainen, 2008; Farquhar, 2012).

That being said, in general, research philosophy helps guiding the researcher to select a research position. This position will determine the way of how the research will be executed (methodological implications) e.g. how the problem is developed, how the data will be collected and analyzed, etc. (Farquhar, 2012). Therefore, briefly summoning up the purpose of our study that is to investigate R&D investments in family firms, Swedish family firms in particular, through their perceptions and approaches, we would like to emphasize that this study is based on subjective point of view. Therefore, our ontological stance is that of subjectivism with an interpretivist epistemological position for we believe that the knowledge we are interested in, is socially constructed.

3.2 Research approach and strategy

Having established our research philosophy, we are now going to discuss the approach and the strategy of the research. In the previous sections, we have several times mentioned that we are going to use qualitative approach in pursuing the research, nevertheless, we have yet to elaborate more of this choice. Qualitative approach as our choice, besides it is to answer the call for more qualitative research in family firms (Nordqvist, Hall, & Melin, 2009), it also fits precisely with our purpose. Qualitative approach which does not put emphasis on ‘quantifying’ (as in most, if not all, quantitative approach) but on ‘exploring process’ instead, will enable us to gain an in-depth knowledge about the phenomenon as aimed in the first section. Additionally, qualitative approach aligns with our philosophical stance of interpretivism as supported by Creswell (2002) that an inquirer, in qualitative approach, builds knowledge based on ‘constructivist’ or ‘participatory’ perspectives.

In addition, we also discuss the ‘logical reasoning’ which we use in this the study. Reichertz (2014) elaborates three logical reasoning used in research and they are deduction, induction and abduction. He further argues that these three are neither method nor tools, but instead they are ways of connecting and generating ideas. We briefly present the differences between the three,
but will only focus further on the one we will use in the study. Firstly, deduction, this approach focuses on deducing hypotheses from theories which then are to be tested against empirical data that, afterwards, will lead to either confirming or negating the propositions of the original theories (Miller & Brewer, 2003). Induction, on the other hand, reasons that empirical generalizations (or theory) come from the empirical data. Lastly, abduction or abductive, it could start from empirical data, as in induction, yet it does not aim for universal theories or laws generation but more aiming to the development of hypotheses or theoretical models (Chalmers, 1976). In this study we are going to adopt the abductive approach and the justifications of doing so will follow.

Abduction does not start without knowledge, but rather it puts the knowledge or theory aside in the observation process to avoid presuppositions (Reichertz, 2014). Hence, even though we did a literature review in the beginning that was for establishing preliminary understanding about the field we are interested. Following that, we encountered with the particular phenomenon (R&D investments in family firms), of which we decided to examine through different perspectives (geographical context, approach and theoretical lens) which might allow us to shed a new light about the phenomenon through a logical inferential process. This (logical) inferential process by Shank (2008) and Durieux (2001), is described as abduction. Furthermore, the inferential process allows the use of interpretations which are in line with our established research philosophy of subjectivism and interpretivism and also our qualitative approach which emphasizes on process.

Having presented our research approach, in the following part we proceed with our research strategy that is case study, and the reasons behind the choice.

3.2.1 Case study as research strategy

To start the discussion, we would like to recall again the aim of our study that is to understand how family firms actually approach this types of investments (R&D) and their perception about R&D spending and also our interest of observing the phenomenon from a Swedish family firm’s context. These two components will, along with the discussion progressing, help explaining why case study is selected as our research strategy. Additionally, there is also a call for further investigations to use case studies with qualitative methods in order to understand in detail how family firms pursue growth strategies while keeping control of the firm (Goffee, 1996).

The seminal work of Yin (2009) about case study elaborates that case study is very useful in examining (in-depth) a contemporary phenomenon in its real-life context, in particular when there is no apparent boundaries between the phenomenon and the context. Furthermore, Baxter and Jack (2008) argue that this investigation enables a researcher to observe the phenomenon from many different facets. Departing from these two elaborations and the abductive approach we selected, we are certain that through case study we will be able to bring up the complexity of the phenomenon that is R&D investments in family firms (Eriksson & Kovalainen, 2008). Furthermore, the real-life context of case study (in business research) is argued by Farquhar (2012) as the place where the phenomenon takes place, of which we argue that it will play an important role in enriching our understanding of the phenomenon. Additionally, since our research questions put an emphasis on examining processes, case study is the right choice since it works effectively in this matter because the researcher is able to approach participants in their contexts (Putney, 2010). Moreover, in regard to our choice of ‘how’ type of question, Putney (2010) argues that case study is suitable for answering particular types of questions, of which she gives instances of ‘how’ questions. Therefore, we are certain that case study as our research strategy does not only come out of our interest and understanding but also gets supports from several scholars with their views on it without any intention to belittle other available research strategies.

Further discussion on case study as our research strategy, we encounter the common “crossroads” of single case and multiple cases design, although by involving the choice between ‘holistic’ and ‘embedded’ there are four available options of designs in total to choose from (Yin, 2009). It is not our objective to explain each of the options in detail, but we think that it is essential to, at least, understand their use according to literature. Single case design is often used (but not limited to only) for a case which has unusual (hard) access to get or represents extreme distinctiveness or
uniqueness (De Massis & Kotlar, 2014). Meanwhile, multiple cases design is useful to build a comparable and contrasting study (Barringer & Greening, 1998), of which in our study is beneficial to develop and/or testing a theoretical construct or also known as extensive case study (Eriksson & Kovalainen, 2008), and also it allows us to see new insights of an extant theory through replication logic (Chirico & Nordqvist, 2010). Furthermore, by taking our main aim into consideration i.e. to understand the phenomenon instead of focusing (only) on the case, we then decide that multiple cases design is more suitable for our research. Afterwards, we also need to briefly discuss our choice between holistic and embedded in case study. The former put emphasis on an organization level of data collection, whereas the latter extends it to a smaller level within the organization (Yin, 2009). That being said, we decide to employ the holistic approach by taking into account the access of information in our cases and the time limit of our research.

3.2.2 Time horizon

As mentioned before, our research is limited by a short time period which consequently influence some choices we have made within the research methodology. Therefore, by taking the time constraint into account we then define our research time horizon as cross-sectional which basically says that the study is conducted with a focus on a phenomenon at a particular time not its changes over time (Saunders, Lewis, & Thornhill, 2009; Shanahan, 2010).

3.3 Research design and method

This part comprises the general plan of how to answer the posed research questions which are data collection and data analysis phases, but prior to that, it is necessary to grasp the nature of the research questions i.e. the objective or purpose of research which commonly being classified into three categories exploratory, explanatory and descriptive. The definitions of the three are as follow, to find out or to assess a phenomenon in a new light, to explain a relationship between variables and to portray an accurate profile of a person or event, respectively (Robson, 2002). Then, by looking at the research questions and the aforementioned definitions of the three categories, we are certain to select an exploratory approach in our research. Therefore, flexibility and adaptability to change will partake in the research process which in return will enable openness to any emerging facts or findings which potentially offer new insights. Moreover, our strategy, case study, is suitable for a research of an exploratory or explanatory in nature (Putney, 2010).

3.3.1 Data collection

The first step in our data collection process was to identify a suitable population of firms to be reached. Since we did not possess any database of family firms, we started with Google search using keywords 'Family business', 'Family firm' and 'familjeföretag' then followed by a city e.g. 'Jönköping' or 'Växjö'. Afterwards, we further found an online database called 'Largest Companies' which then being very useful to search for a list of companies in Jönköping and nearby counties. The following step was to choose companies, however, considering the relative capital intense activities of R&D, we tried to identify companies (cases) with a minimum turnover of around 100 MSEK. Additionally, we investigated the ownership and the industry of the companies which eventually provided us with a shortlist of 28 companies, identified as 'family firms' based on our definition of a family firm (See Appendix 1).

In those cases where the contact information was available, CEOs of these firms were sent an e-mail. In other cases we had to write to the general contact (info) as a first point of contact. The e-mail proposal provided an introduction about the authors, the university, the research topic and the purpose of the study. An interview with a person who holds a position to answer such questions (owner, CEO or top-management) was desired for the purpose of the study. These e-mails were sent during March 2016. After a period with little or no responses, we changed our strategy and started to reach out to companies over the phone. This approach was shown to provide us with a more successful outcome. In total, six out of 28 companies responded either by an e-mail or over the phone (on which an appointment could be set up directly), this represented

---

1 Web address www.largestcompanies.se
a response rate of around 21%. Afterwards, during the first half of April 2016 interviews were held at the locations of each respondent.

During the interviews, an interview protocol was utilized. The purpose of the interview guide was to provide guidelines for the interviewers as well as to ensure the areas of interests were well covered. The interviews were all audibly recorded considering the researchers’ limitation to memorize everything (Brinkmann & Kvale, 2014). In addition, we took (researchers) notes during the interviews which would be used as additional source of data during the analysis. We discuss the detail about our interview technique, semi-structured, in the following subsection which comprises the arguments for choosing the respective technique, the content of the protocol and the development process of the interview questions.

Furthermore, there was also additional data sources from the cases which was gathered through researchers’ notes, hence, would allow us to triangulate the data for generating more convincing and accurate findings (Tracy, 2010).

The following table provides a brief overview each of the six companies (A-F) in terms of industry, turnover and number of employees:

<table>
<thead>
<tr>
<th>Company</th>
<th>Industry</th>
<th>Turnover</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Shoe manufacturing</td>
<td>200 MSEK</td>
<td>130</td>
</tr>
<tr>
<td>B</td>
<td>Industrial components</td>
<td>340 MSEK</td>
<td>200</td>
</tr>
<tr>
<td>C</td>
<td>Power transmission</td>
<td>280 MSEK</td>
<td>120</td>
</tr>
<tr>
<td>D</td>
<td>Agricultural machinery</td>
<td>1700 MSEK</td>
<td>1200</td>
</tr>
<tr>
<td>E</td>
<td>Container handling</td>
<td>360 MSEK</td>
<td>170</td>
</tr>
<tr>
<td>F</td>
<td>Industrial components</td>
<td>580 MSEK</td>
<td>400</td>
</tr>
</tbody>
</table>

Table 1 Company information

3.3.1.1 Semi-structured interview

In order to accomplish the purpose of research that is to understand the perception and the approach of family business on R&D investments, we chose semi-structured interview as our data collection technique. In general, qualitative interviews could help the researcher finding experience, opinions and ideas through detailed and comprehensive talk (Rapley, 2004). Additionally, interviews are more economical relative to other methods in terms of resources and time (Silverman, 2011) although this argument, in reality, could vary between researches. However, as any other research methods, interviews are not without potential biases thus it is important for the researcher to select well-informed interviewees and whenever possible to get different interviewees in order to provide different angles on the phenomenon, of which in our case would be addressed by the use of multiple cases design.

Now, the reason for using semi-structured design is due to its flexibility in practice, through the use of open-ended questions which enables us to align the data collection process with our exploratory objective. Moreover, semi-structured interview, unlike the unstructured one, does not flow without any “control” instead it is guided by some themes or predetermined questions in the process which are helpful in enabling comparability between cases in the data analysis phase, particularly in our extensive approach to case study strategy.

Further discussion about the interview guide, our interview guide or ‘interview protocol’ as we call it, contains four main parts which are introduction, ground rules, questions & probes and closing (see Appendix 2). The introduction part briefly explains who we are, the purpose of the interview as well as the research and the reasons behind selecting the respective respondents. The introduction part helps the interviewees to capture the objective of the interviews, and also to give
them a brief information about the topic of interest in our study in addition to the topic we provide in the preliminary e-mail communication. The ground rules part contains some rules regarding the interview and its process such as length of time, the type of participation, confidentiality of collected data and the final product of our research i.e. our master thesis. The questions and probes part contains three main topics or categories with a list of questions and probes in each. Eventually, the closing part which concludes the interview protocol with a thank you and more importantly we allow the respondents to inquire any matter regarding the research.

Additionally, in order for the questions and probes part being able to fulfill our research objective, we derived them from the research questions. Furthermore, to increase the effectiveness of the questions and probes, we attempted to triangulate the research topic, research questions and theoretical lenses through rigorous brainstorming and discussions. We eventually came up with three major guiding topics which are ‘Business & Competition’, ‘R&D investments’ and ‘Competitive Strategy and Resources’. Each topic represents our research interest regarding R&D Investments particularly in family business where some question not only attempt to explore the internal aspect of the business but also the external aspect of the business i.e. competition in our case.

The first topic is used to capture information about the company, the business and the competition surrounding them from the interviewee’s eyes who is either family owner or family owner-manager. We attempt to explore the context where the firm operates and how it operates. Here, we would expect some historical story about the firm which could be very crucial in understanding R&D investments in the business.

In the second topic, we put emphasis on R&D investments by asking the interviewees about their perceptions on R&D investments. We extend further the questions to cover a wide range of interests regarding R&D investments in the firm such as their perceptions of R&D investments relative to other types of investments, and their reasons of whether or not to invest in R&D for instance. In addition, we inquire the interviewees on how they run or implement R&D and its investments. Also, we explore the roles of knowledge in the firm’s R&D.

In the third topic, we focus on the competitive strategy and resources of the firm. We want to see how R&D investments play in the overall corporate strategy or perhaps, it is not even considered in the corporate overall strategy. Here, if R&D investments actually partake in the corporate strategy, we ask the interviewee on how the firm measures the achievement. Furthermore, regarding firm resources, we investigate the strength and weakness of the firm, and also the uniqueness as perceived by the interviewee.

Table 2 below provides closer details regarding the interviews,

<table>
<thead>
<tr>
<th>Company</th>
<th>Name</th>
<th>Generation</th>
<th>Position</th>
<th>Data Collection</th>
<th>Date</th>
<th>Interview length</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Max</td>
<td>5th</td>
<td>Owner-CEO</td>
<td>Personal interview</td>
<td>04.05.16</td>
<td>121 minutes</td>
</tr>
<tr>
<td>B</td>
<td>Chris</td>
<td>4th</td>
<td>Owner-manager</td>
<td>Personal Interview</td>
<td>04.06.16</td>
<td>72 minutes</td>
</tr>
<tr>
<td>B</td>
<td>Bob</td>
<td>non-family member</td>
<td>R&amp;D Manager</td>
<td>Personal Interview</td>
<td>04.06.16</td>
<td>72 minutes</td>
</tr>
<tr>
<td>C</td>
<td>Andy</td>
<td>2nd</td>
<td>Owner-Chairman</td>
<td>Personal interview</td>
<td>04.11.16</td>
<td>83 minutes</td>
</tr>
<tr>
<td>D</td>
<td>Terry</td>
<td>2nd</td>
<td>Owner-Chairman</td>
<td>Personal interview</td>
<td>04.12.16</td>
<td>82 minutes</td>
</tr>
<tr>
<td>E</td>
<td>Gary</td>
<td>1st</td>
<td>Owner-CEO</td>
<td>Personal interview</td>
<td>04.13.16</td>
<td>53 minutes</td>
</tr>
<tr>
<td>F</td>
<td>Marc</td>
<td>3rd</td>
<td>Owner-CEO</td>
<td>Personal</td>
<td>04.21.16</td>
<td>62 minutes</td>
</tr>
</tbody>
</table>

*Table 2 Interview details*
3.3.1.2 Factory visit and extended interviews

In addition to the semi-structured interviews, we also did factory visit in three cases. This activity was initially unplanned as a part of our data collection, instead it emerged during the interviews. Time availability of the respondents was the determining factor for this activity to take place. Hence, out of the six cases we had, three cases offered us the opportunity. The factory visits provided us with information about the company’s overall manufacturing process and also R&D process. Through the factory visit, we received more insights on how the three cases approach R&D within their business operations. During the factory visits we continued inquiring the respondents, of which we would describe as an “extended interview”.

At company C in particular, the factory visit helped us to establish a clearer picture in our data of the phenomenon of interest. Although the interview provided us with some data, we somehow sensed that there was something more in it. Hence, the factory visit which allowed us to see the products and the production or assembly process, we could further develop our questions in the “language” of the respondent which in return helped us answering our curiosity. Meanwhile, in the other two factory visits they were more like observation where the respondent explained the process while we were observing and also taking notes.

<table>
<thead>
<tr>
<th>Company</th>
<th>Name</th>
<th>Generation</th>
<th>Position</th>
<th>Data Collection</th>
<th>Date</th>
<th>Interview length (including factory visit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Chris Bob</td>
<td>5th</td>
<td>Owner-CEO</td>
<td>Extended interview</td>
<td>04.05.16</td>
<td>60 minutes</td>
</tr>
<tr>
<td>C</td>
<td>Andy</td>
<td>4th</td>
<td>non-family member</td>
<td>Owner-manager R&amp;D Manager</td>
<td>04.06.16</td>
<td>60 minutes</td>
</tr>
<tr>
<td>D</td>
<td>Terry</td>
<td>2nd</td>
<td>Owner-Chairman</td>
<td>Extended interview</td>
<td>04.11.16</td>
<td>60 minutes</td>
</tr>
</tbody>
</table>

Table 3 Factory visit and extended interview detail

3.3.2 Data interpretation & analysis

Prior to the analysis of data, we needed to get the data ready. In addition to the interview transcripts, we also had researcher’s notes from each interviews as well as some information from additional documents from two firms showing the history of the companies for the last 100 and 50 years. Therefore, the very first step to do is to reduce the collected data into a proper amount, thus it will allow an easier analysis for the researcher (Miles & Huberman, 1994). During the data reduction, we took the research questions into account, thus the modified data would be able to help answering the questions. The result of the reduction process was reported in the empirical findings independently for each case by following a format of narrative description, in which we displayed some quotes from the respondents as well as other supportive evidences (De Massis & Kotlar, 2014). Therefore, we could provide an overall view and the richness of every case which is important for the analysis.

Afterwards, we started to highlight some words and phrases in the empirical findings in which we also involved the research purpose, questions and also our conceptual framework as guidance. Both researchers went through the empirical findings of each case, and it was done separately in the beginning in order to get a more rich interpretation from each researcher which later followed by a discussion of the results. This process resulted in the summary of empirical findings which contained selected evidences from all cases which were categorized according to the theoretical lenses. The key point in this step is to underline any information within the findings which exhibit similarity with extant theories and concepts or found to be surprising or new, in addition to sharing same message or showing any connection.
The last step was to analyze the summary of the findings based on their respective theoretical lens. During the analysis, we went back and forth between analysis and theories as well as across cases in order to interpret and create a meaning out of them. Then, we divided the emerging findings based on the found perceptions on the phenomenon, of which we split into two groups of firms (see Appendix 3). Eventually, we put our conceptual into use and adapted the framework according to the analysis, thus we could build an empirical grounded framework to explain the phenomenon.

### 3.4 Research quality

In developing our research, we certainly consider an important factor that is research quality. Therefore, in order to ensure the quality we employ some evaluation criteria, particularly the ones which are often used in qualitative study. In our study, we employ a criterion as suggested by Guba & Lincoln (1994) that is ‘trustworthiness’, of which will be discussed in the following.

#### 3.4.1 Trustworthiness

To assess trustworthiness according to Guba & Lincoln (1994), there are four criteria which commonly used and those are ‘credibility’, ‘transferability’, ‘dependability’ and ‘confirmability’ (Bryman & Bell, 2015). The first criterion concerns about whether or not the results are being credible. The second criterion refers to which extend the results can be transferred to other context or setting. The third criterion emphasizes on the consistency of the findings in the changes of research settings. Lastly, the fourth criterion refers to the degree to which the results could be confirmed.

In order to meet the aforementioned criteria, we attempt to implement several approaches through the development of our thesis. Firstly, we use an approach known as triangulation, which emphasizes the use of multiple sources or methods (Bryman & Bell, 2015). Data collection is the phase in our research which employs this approach where we collected several sources of data as mentioned in the data collection section above and, moreover, they were collected by multiple (two) observers. Hence, it enhances the credibility of firstly, our data and findings, and more importantly our results. In addition, validation by respondents would be put in place, in which the findings would be sent to the respondents, hence, conformity between our findings and the respondents' perspectives could exist (Bryman & Bell, 2015).

Secondly, regarding transferability, we attempted to build detail writings about the methods being utilized in the research as well as emphasizing on the provision of rich information of the used cases and their contexts, of which Geertz (1973) calls it “thick description”. Additionally, we also added the boundaries of the study which could be used as considerations prior to any attempts to transfer findings, then we eventually would let the readers to make judgment of transferability (Shento, 2004). Meanwhile, the provision of detailed processes in the study e.g. research design, data collection would also enable the readers to repeat the study in the future which in return could be an answer to the issue of dependability (Shento, 2004). Eventually, the use of triangulation method as a means to reduce researcher’s bias, and also the detailed description of methodology to determine an extent to which the emerging data and findings are accepted by readers would also help meeting the last criterion, conformability (Shento, 2004).

### 3.5 Ethical considerations

In a study like this, using an interview method, it is important to make sure ethical guidelines are not violated. Throughout this research project, common codes of practice and ethical principles in social research have been taken into consideration. According to Williams (2003), core issues regarding social research ethics are often distinguished into four main areas: the avoidance of harm, the right to privacy, the principle of informed consent and whether deception is involved. As mentioned in the data collection part, each participant was informed about the voluntary nature about the study through an email or during a phone call where a broad introduction to the study was introduced. This was a first step about voluntary participation which is closely related to the principle of informed consent. Every interview started with an overview of the consent form consisting of information about the researchers, the purpose of the research project and ground rules concerning the right to privacy and the principle of informed consent. The consent form
outlined ground rules regarding privacy and confidentiality was provided and discussed between the researchers and each of the participants to find a mutual understanding. A permission to record the interview for the purpose of transcription was discussed and each respondent was requested to tick a box for yes or no. The same procedure was done about confidentiality of information. Each respondent was asked to tick a box regarding information which are considered sensitive (e.g. company name, respondent's name etc.). However, after the interviews were conducted, we decided to anonymize all the data and assign coded names such as company A, company B etc. All respondents were also informed that in the end of the research project, all the recorded data will be destroyed and not used for other purposes or accessed for a third part. The last part of the consent form was about general willingness to participate in the study consisting of the participant’s name, signature and date.

Harm to participants have been avoided through a careful assessment of the questions in the interview guide in order to avoid participants from a situation of stress or potential damage to the future employment in the firm. An estimated length of time was also suggested and agreed upon beforehand in order to avoid too much of an intrusion for the interviewees and their time. Another issue was to make sure that the family harmony was not negatively affected because of the interview and the participation of a family member in the study. For example, sensitive questions regarding certain family matters were therefore avoided. Interviewees were also informed that they may refuse to answer a certain question for whatever reason. All of the above mentioned ethical considerations was a way to make the interviewees feel comfortable while participating in the study and to fulfil the main ethical principles. This was done in a manner to show mutual respect between the respondents and the researchers in the conduct of the study.
4 Empirical findings

In the empirical findings, we present our findings of R&D investments and endeavors from all six cases. The presentation of findings is structured based on companies e.g. company A, company B, etc., thus we are able to provide a whole picture of the topic discussed in each case. Afterwards, at the end of the chapter, we deliver the summary of the findings in tables based on the theories we use in the next chapter.

4.1 Company A

Company A is a fifth generation shoe manufacturer. The company has been within the family for 177 years. Since 1952 the company has been run in the shape of a professional entity. Max has been the owner and CEO for 43 years. He started to work for the company in his early twenties and took over as a majority owner when his aunt passed away in the early eighties. One of Max's sons runs a separate company within the family holding company and he is also involved in the board. The company has around 130 employees and a turnover of almost 200 MSEK. The company sells its product through a business-to-business model with sales organizations in several countries around the world. Although the company has a global presence when it comes to sales and purchasing, the primarily focus for the organization has been on the Nordic countries.

4.1.1 Interview with owner-CEO

Max, the owner and CEO of firm A, described that R&D has been a part of firm A since quite a while. He brought us through the story back in 1980s when they invested in the latest new machineries, new production equipment while the other players did the opposite. He underlined that the company during that time, took a big step as he described as follow,

"[...] during the 1980s we did what made us different from all others in Sweden/Scandinavia, we invested in new machinery. We invested in the latest production equipment while all the others did the opposite" (Max)

The decision made was not without a fruitful result as he further explained that today none of the others are still in the business except firm A. He told that the reason of the other player did not do likewise firm A because it was not affordable for them. Nevertheless, Max argued them back of the importance of it in order to change. He stressed the importance of R&D investments as an investment for the future.

"Well... Forget about the profit and take the profit to buy machinery, you have to change! And they didn’t and they lost. They underinvested themselves out of the future! And we did the opposite... We invested ourselves into the future instead" (Max)

He furthered the discussion about R&D investments by bringing up knowledge and curiosity. He took an example of Electrolux to illustrate knowledge and curiosity. He described that Electrolux once had a department called 'future lab' where the company nurtured knowledge and curiosity, however, it was then closed down. This decision, as he further argued, could strangle their designers. In addition to the two, he also brought up on the table necessity. The statement of his "if I don’t do it, there is no good" clearly conveyed the definition of necessity in the context of R&D investments. Then, he added entrepreneurial approach. He suggested that curiosity is close to entrepreneurial approach, and made a statement of "if you want to be innovative, all innovators are curious". He in addition mentioned that they are (curiosity and entrepreneurial approach) rather a mind-set, a personality approach. The following excerpt shows his opinion about the aforementioned terms,

"Every time I focus on what I know I make more money because I have the knowledge, I have the curiosity, it is a feeling of necessity, and I have an entrepreneurial approach" (Max)
Max added that investments are not always about cash spending, for instance when they changed a production system into so called 'hybrid system' where it did not cost the company anything. He finally concluded by emphasizing continuous development work is critical for all the achievements they have made such as innovative design, exciting materials and pioneering technical solutions, and added "This is, and always has been, the strongest guiding principle for our company".

In practice, firm A has a really interesting approach toward R&D. Max talked about the years, around 1990s, when they came up with the concept of 'ergonomic development'. It was the time when the company started to put emphasis on 'value-adding' into their business, as Max recalled his statement to the sales team "remember you're selling added values". During those years also, the company took a step to adopt the word innovative where he described as "a very hard nut to crack". However, the persistence they showed during those times was rewarding as they successfully developed a new technology which up to now still is an important innovation. He continued by highlighting that over the years the company has grown stronger in the belief of innovative idea. It is in year 2016, he continued that the company totally embraces innovative as 'positive necessity'.

Furthered the interview, Max added that they no longer called R&D as R&D but instead they called it as Research, Innovation and Design (R&ID) as shown in the following,

"I don't call anymore the department 'R&D, I call it RID. The 'I' is for innovation. My department today is 'Research, innovation and design', RI&D. This is a more appropriate description of what we are doing. Much more appropriate than R&D" (Max)

This alteration was due to their focus on innovation and design. Moreover, they also referred the R&D manager as 'Modelista', of which he explained that in the shoe industry the title represents the highest title a person could achieve and it takes twelve years of experience to be considered as one. He also underlined that they managed to have the best Modelista in Northern Europe which allowed him to get the knowledge the company has now. In addition to that, he mentioned that the company had some courses from Kellogg school regarding innovative behavior and also was provided with a tool called IR-radar system which could help the company to understand why innovation behavior is important. Furthermore, he pointed out that the company had an innovation wish list, of which he elaborated as follow,

"When we said we don't have any innovation, we suddenly start to think if we should innovate something, what would be on the wish list. [...] We have a wish list and are actually taking small steps on some of these points so we are quite confident that we within one or two year have probably innovated 3 of our 5-10 points" (Max)

He also underlined that it is about teamwork. Telling to have two highly qualified persons in the designing team working together in addition to his 43 years of experience, he strengthened the emphasis on teamwork. Afterwards, Max continued with the discussion about knowledge acquisition. He mentioned that knowledge has been acquired over time, and within the shoe industry it was passed down through generations for the rareness of particular institution in teaching shoe manufacturing across the world. The discussion proceeded to collaboration, in which he informed that they did not do a lot of collaboration because by doing that in their industry might end up turning the partner into a competitor. He summed up the discussion with stressing that it is important not to look on the competitor’s product in order to develop own product.

### 4.2 Company B

Company B has been family-owned for four generation. Chris and one of his brothers are directly active in the daily operations of the company and together three family members have positions in the board. The goal is to have a majority of external board members. The company has had an external chairman of the board since 2013 and the CEO is a non-family member. Company B has been an export-oriented business since the sixties with a strong focus on Europe. The company has around 200 employees in Europe with a total turnover of around 340 MSEK for the group.
The turnover has been relatively stable for the last 4-5 years and the company has focused on organic growth. Most of the major business functions in the company, from the management team to the final assembly of products, are made in the factory in Sweden.

4.2.1 Interview with owner-manager and R&D manager

For company B, the perception of R&D is deeply rooted and recognized as an important type of investments in the firm. The attitude towards R&D goes back to the founder of the company, Chris's grandfather. A strong drive to find out and develop new ideas have existed since the early days of the company. Both Chris’s father and grandfather had a strong focus to improve the efficiency of their products,

“That is a heritage in the family and business. My father and grandfather were driven to find out and develop new ideas, it was not driven by money. It was to develop and want to help out and improve efficiency in our products” (Chris).

Bob who is the current R&D manager of Company B added to Chris's expression during the interview and confirmed the above statement,

“You can also see Darwin get quoted in our CEOs emails. It is not the strongest that survive, it is the most adaptive. And everyone has the willingness to make better products, it is in the genetics of the firm” (Bob)

The strong emphasis on R&D endeavors can also be traced back far to the 70's, where they already at the time considered themselves as quite early to have such focus. Nevertheless, it does not seem to be surprising since the "development and improvement" mind-set has been around since the era of the founder, Chris described:

“[..] if he needed something additional he invented that also” (Chris)

The practice of R&D throughout the history of the firm has crystallized some values which has been transformed into a slogan called “never stand still”. This is crucial for the firm as guiding principle which keeps the consistency of engagement in R&D activities within the firm. Chris described the slogan:

“Never stand still’ means in firm B’s words that we are constant and proactively develop and research new product. This is the main idea that we shall not stand still” (Chris)

Chris emphasized the importance of R&D investments to the company, however he concluded that it is important to take into account what the market wants,

"It is important! But it shall also be on the basis what the market needs. We have a little lesson to learn when it comes to listen to the market” (Chris)

In the year of 2000, Company B decided to take a new direction and focus on certain core products. As a result this decision the business started to decrease but it has increased steadily since the initial decline. A way of making this shift into certain areas possible was to continuous invest in their R&D department. Chris described this development of the R&D department,

“During that time we invested a lot in the R&D department. From year 2000 we started to go for a bigger R&D and production department. It started to develop in a much more modern way” (Chris)

One of the main reason for Company B’s strategy to focus on certain core areas and rely on R&D is the striving to be a player in the front of the competition. Chris described that as a leader you are closely observed by your competitors and expressed it like this:
“The reason to develop these products is to keep our competitors way behind, we try to be in the front league. The fact that our competitors are trying to copy us is a proof that we do something great. It make us try harder also” (Chris)

The strive to become and sustain the leader position within their industry has been a trigger for this type of investments,

“We shall not follow the market, we shall take market shares. We have added products and strengthen our existing” (Chris)

One important asset for a fruitful R&D department is a skilled workforce according to Chris. He explained that hiring practices and the enhancement of internal knowledge creates a confidence to continue this approach and this distinguish Firm B from its competitors,

“We have really skilled people. Computers, everyone can buy but you need human resources and we have also been able to hire skilled people” (Chris)

Rob described that one way how Firm B deals with the creation of new ideas is to go out and meet the R&D department of their customers,

"Our R&D people go out to meet the R&D departments from our customers. They have the talk together. We also have product managers with a more strategic focus. The R&D department is more doers. Looking at what will happen in 5-10 years, what kind of products will it be” (Bob)

During our discussion with Rob, he explained that they try to create an environment in his department with a tolerance for failure in order to learn,

"We are right now developing a product that we want to be one of our core product. Now we found out that we have to rethink the performance of the product and how it will affect the complete system. We are learning all the time and being open that we are learning. Fail but learn from it” (Bob)

In order to fill potential knowledge gaps in a certain projects, Company B has sometimes hired outside competences for a limited period of time to bridge this gap with their specialist knowledge,

"And then we have mutual collaborations, the more innovation parts we are making ourselves with help from consultants when we don’t have the knowledge” (Bob)

He further added trends into the discussion of knowledge. Bob described that they follow the on-going trend around the world, for instance mobile trend, of which they would later attempt to adapt into their business.

4.3 Company C

The company has around 120 employees with a turnover of around 280 MSEK. During the last couple of years the company has experienced an organic growth of around 10-15 percent every year. Already from an early age Andy started to get involved with various tasks in the company. Andy was the managing director for company C during 15 years but his role in the company today is as a working chairman of the board and owner. Apart from Andy, the board consists of outside competences and since 2003 the CEO is also a non-family member. Andy’s father was the founder of the company and after he passed away Andy managed to purchase his siblings’ shares in the company to become the single owner. The next generation is on their way to the company and just like Andy they grow up working during the summers in the family enterprise. Sweden and the Nordic market has always been the geographical focus for company C since early years. All the manufacturing is done in the factory in Sweden but the company has sales representation offices in the Nordic countries.
4.3.1 Interview with owner-chairman

When we discussed the concept of R&D with Andy, he described that the concept of R&D investments would not be the correct term to represent how company C perceives such activities,

“We don’t notice it in that way because it’s so integrated in the processes. Everything we do is R&D, I think every product from firm C is unique. We never do two products that look exactly the same. When we approach the customer, we try to create something new every time” (Andy)

According to Andy, R&D as a certain type of investment does not occur in Company C and a certain account or expenditure for this is not needed. Andy described that “it is so connected with what we do on a daily basis” and a separation to call something R&D or not would not provide a representative picture of that is going on in the company.

The specific product they make and the fact that each product is unique makes a continuous rethink necessary to come up with a tailor-made offering for each customer's requirement. The trigger of the creative process therefore starts when a customer approach Company C with an idea,

“I think how development happens at firm C is when a customer has an idea and we meet and discuss and suddenly we are projecting some kind of product or develop a new way to handle a problem” (Andy)

Andy continued:

“Usually they come to us and say that we have some crazy idea and we heard that you are very flexible, can you help us? That is a common starting call. We have room to be very flexible” (Andy)

When Andy recalled back on how the development of their products has evolved since the early days when his father was active, he noticed several changes in the company:

“It is a big difference [...] I think that the education level has changed exponential. And I think that is also part of our goal, to try to recruit people that knows more about the future than ourselves. We try to find really talented people in order to take the next step into the future” (Andy)

Andy described that this journey has been highly influenced by the changing need of the customers. Andy noted that the needs in the society needs have changed and more and more technical applications are required in general. He explained that a close collaboration with the customer has been the way forward for company C,

“I think it is even closer today. In the earlier days it was much more of a standard product. Today it is much more customized” (Andy)

The niche products that Company C produces have been the core of the business since Andy’s father started the company in the 70s. The specific knowledge in the company has been built up over a long period of time. According to Andy, the fact that Company C has focused on one core area since the beginning has led to a strong knowledge base,

“Everything we do is based on know-how. We are specialists. Because we only do one thing we have acquired more specialist knowledge than almost anyone else in the industry” (Andy)

4.4 Company D

Company D is a manufacturer of agricultural machinery and has an annual turnover of around 1700 MSEK with almost 1200 employees worldwide. The company was founded by Terry’s father
in the 60s and the ownership has been controlled by the family since the beginning. Today, a sibling partnership from the second generation are running the company and all four of them are involved in the business. The next generation (3rd) is now on their way to get involved in the family firm and some of them are already working in the company. Terry and his siblings have managerial roles in either the holding company or its subsidiaries and they all hold positions in the board. The company is present in some 30 countries with local representatives with the majority of its production in Sweden or foreign subsidiaries. Interestingly, many European competitors to company D are also family-owned.

4.4.1 Interview with owner-chairman

In firm D, as Terry opened the discussion, R&D was not a new concept. He underlined that he has been pushing R&D investments his whole life as he stated "I’ve been pushing this type of investments (R&D) my whole life". He argued the reason was that through R&D investments, a new invention could be discovered of which new products, production and marketing could base on. He further made an interesting opinion regarding this investment as follow,

“First come the R&D Investment and if you are happy, other will investments will follow. [...] That has to come first” (Terry)

Not only that, he added some history about how the company started by his father through an invention of farming tool which was a new way to prepare the land in spring. Since then, the company has continued to work on new things and expanded its facilities. Adding to the expansion, they acquired a company in Canada for the purpose of acquiring their technologies, of which at that time were considered necessary for entering new market. The discussion continued to the domain of competition, where he highlighted the importance of R&D especially in the industry with high reliance on R&D. He mentioned that "the power in the market changes due to new inventions‘’. He in addition discussed the frustration if they could not come up with something as he described the following,

“Sometimes you feel such a pressure of doing something, that might be a competitor that brought out a machine or function and you see that everyone wants to buy that so we have to make something that hopefully is better than that and then you can feel the frustration, it might for example be a patent that a competitor has” (Terry)

Terry also added that he personally wanted to see they could do more than what they are now doing. Therefore, they spent approximately six percent of turnover into R&D. Furthermore, he argued that R&D investment is a must for they have to come up with some new things to the customer, a better way in doing things or cheaper way of doing it. He also argued that "customers would avoid the one (company) that does not improve the product", hence he further said that it (development) is an absolute necessity for a business. This was the moment where the discussion entered the domain of R&D as a way to create values for customer. This was strengthened by him saying “we work in favor of our customer” and "we want to make life as simple as possible for our farmers”.

The further the interview went, the more interesting knowledge emerged as Terry made a statement “it is not only innovation, you have to adapt as well to new trends”. It suggests that adaptability is really essential in order to come up with new things. “It (trend) is a big change and it changes all the time” added further by him. He exemplified by telling that a customer would get an iPad at the time the customer purchases a machine from his company, and the iPad would be used to run the machine. He even argued that “we are not too far away from driverless tractors”. Ultimately, he wrapped up by saying that R&D is not only about spending money, but also about finding the right people as shown in the following,

“I would be happy to see that we spend even more but it is not only about spending money, it is also about finding the right people to carry out the job and that is not so easy” (Terry)
He said that in the company they have quite a large department for development. To run a project, they employed a cross-functional approach which involved people from the frontline who interpreted the farmer’s needs to the backend team who run the production. An emphasis of teamwork was obvious when he argued “we have to get everything together”. Further, the process itself could be generally classified into two, conceptual development and industrialization. He elaborated the conceptual development as a phase where they focus working on ideas on how to build a product. A necessity to have a vision was underlined by Terry as he said “we say no vision, no future”.

The conversation progressed into the topic where farmers usually handed in their wishes or desires which then would be analyzed by the company in order to see whether they could be something like new products or solutions. However, they were not just any farmers, but they should be able to see far ahead. He described that they understand the customers well, and also instead of having other people talk to the customers to understand their needs, they did it themselves (“we are there ourselves and speak to them and the influence of the customer is more direct”). Further about this collaboration, he added they also provided the farmers on how to be a better farmer and a better “grower”, of which they got from crossbreeding their knowledge with those from the customers.

He then continued to the discussion of knowledge and people. He underlined the importance of tolerating mistakes as a part of learning process as he argued “if you don’t do mistakes, you don’t do any positive things either”. Furthermore, he explained how knowledge and people intertwined in order to advance R&D as exhibited in the following statement,

“Like the electronics department, we have a couple of very sharp guys and they live their lives through this and they are so committed to it. They read about all new things and technology development, in electronics it is very much about to see what is done in other fields and what sort of components is coming, how can we use them from our perspective and so on. And then we can develop software for that and get things more efficient” (Terry)

We could capture commitment (“they live their lives through this and they are so committed”) and curiosity (“they read about all things and technology development”) played an important role in the process of knowledge building. He added that he went to North America every year prior to the company entrance into that market as a way to get good inspiration source, further stressing the statement he mentioned some examples such as Boeing and Microsoft. And in regard to the criteria of finding people, he emphasized that to have an engineer raised in a farming background would be a strong benefit for the company as they know how things work in the farming industry.

Terry’s influence on the employees could also be considered as a drive for R&D process. He stated that he has been motivating the employees to think of new possibilities. Furthermore, he illustrated a situation where some employees commented “we have never done it before” or “that can never work”, yet he motivated them by saying “you might be right but it is always worth testing”. He also mentioned strong enthusiasm as a necessity, especially in times of facing many failures. As we progressed the discussion to the product development talk, he mentioned that they split the focus of development into two activities which were developing existing products by adding features and making it better, and another one was to developing new machines. Then he mentioned about the strong resources they possessed such as good financial position, good people and good plant which could be the most modern in the industry. A large investment was made into the development of testing facilities and laboratories which he then underlined,

“We are a very modern company, if there will be many years with tough business, we can live through that with very low investments because most of what we have is rather new, well done and with good brands” (Terry)

The decision was well supported by their longer term thinking as indicated in the following,

“I think and hope we think long term, which is why we are here. We don’t have a job and are thinking about moving to another company within two or three year. We don’t
think much in short-term gains. We can take costs that seems to be high in the short-term but are very nice in the longer run, maybe another company in a similar situation could not make that” (Terry)

4.5 Company E

Company E is active in the material handling industry with a specialized focus on container handling equipment. It has around 170 employees with an annual turnover of almost 360 MSEK. Gary founded the company around 40 years ago and he holds the position as the CEO for the organization. His wife and three children are also involved in the company today. Gary’s son is the current vice president for the company. The customer base consists of truck and crane manufacturers and Company E provide their equipment to a global market through their sales organization and daughter companies with representation around the world. Every product is entirely made in-house in their factory in Sweden with exceptions for only a few local subcontractors in the assembly process. Company E operates in a niche-market with little or no competition for some of their products.

4.5.1 Interview with owner-CEO

At firm E, Gary, the owner and CEO, started the conversation with the description of the business and company, in which he mentioned that the company owns some patents and intellectual property. He further elaborated that they do not have R&D department at all as exhibited in the following,

“We have not had a R&D department at all. We have an engineering division and the majority of the job has been on order designing. You get an order, it has to have some modifications and that is the designing we do. In that way we have done the development as well” (Gary)

Compared to other industries that expect the supplier to introduce new or upgraded products to the market on an annual basis, Gary explained that the requirements from their customers do not change much over time. What has driven change for Company E has been when their customers or end-users of their products have experienced problems related to for example fatigue. The engineering department is an important function in Company E but Gary noted that it is hard to divide what is what,

“It is not that ‘we have to do something new for next year or change the design’, that is nothing like that. So we have 13-14 engineers working in our engineering department [...] I cannot distinguish what is development and what is normal engineering, it is a mix” (Gary)

Company E sells their products solely to other manufacturers instead of approaching the end-user directly. The relatively conservative market of the end-user is another reason that don’t require Company E to provide the market with new attachment each years, Gary explained:

“What we have today, what you see today, is the old existing versions that we produce since almost 30 years, it is very well-developed and we have very little problem with it” (Gary)

He also told us that R&D projects are risky to firms in general since you go into a new and uncertain territory,

“It means that when you do something new, you can really only lose. If you have a problem, you have a problem that you never had before” (Gary)

However, Company E has recognized a growing demand and this is a new area for the company which required a substantial rethink to meet the changing market needs. Gary explained to us that this is a project which is going more in the direction towards how he perceives R&D,
“The demand is increasing slowly towards heavier containers, they are handling more containers per year. We have had to patch up the unit, push them upwards, and you come to a point where it cannot go any further, then you have to take a step back and redesign, start another line, that is what we do now. What we try to do is to reduce the weight, increase the life-time and hopefully maintain the cost. So that is more of a R&D project than we have ever made before” (Gary)

Gary concluded:

“We are taking, call it a step forward, but we have been on this path and now we take this path” (Gary)

Traditionally this kind of projects have not been the typical procedure for Company E when it comes to product development. Similar to our discussion about what is R&D or not, Gary argued that it is hard to separate such activities also when it comes to the accounting of the cost,

“It's a bit new that we really can say that we have a R&D project so we haven't really taken that out. Bookkeeping wise it is not that we say ‘This cost is for R&D’. no, it is just going to the big pot really. Of course it is an investment but we don't really look at it as an investment but of course it is, it is a big investment but it is often times hidden in the other activities” (Gary)

What makes development tricky for Company E is the time-consuming process to test the durability of their products. In order to run such tests, certain end-users take part in this project to make sure that their products accumulate a sufficient amount of hours,

“We need a machine to test it with so we align with them. They have a test machine that they run tests for their own purposes” (Gary)

“We have two prototypes running now and it is going to be two more rather shortly, to accumulate hours. But you're lucky if you get 4000 to 5000 hours in a year, and you need 20000 hours, it takes some time.” (Gary)

According to Gary, the major strength in the company is the high degree of specialization in a particular product area. This specific know-how has led Company E to a leading position within this particular product market,

“It is a real niche-product. The products you see on the wall which is a mobile equipment, we are practically alone in the world to produce that” (Gary)

Most of the know-how is specific to the firm and has been acquired and enhanced since the Gary started the company in 70s. According to Gary, the company possesses a unique level of knowledge and experience which has been created over a long period of time. This has also led to a situation where there is only a limited number of external competences to get further advice from,

“It is very limited of engineers that have the experience of fatigue to the level we are at. Because fatigue is really 90% of our problems, it lives 10000 hours but it doesn't live 20000 hours, what do you do? […] That is why we need educated, experienced people, but they are here, we hired them. We could use consultants for a period, for example in this development project” (Gary)

4.6 Company F

Company F was established during the 50s and the third generation is running the company today. The company has a turnover of around 580 MSEK and a total number of 400 employees Marc is the CEO of the company and controls 50 percent of the company together with his mother and brother. All three are members of the board but Marc is the only family member with a managerial role in the company and he has hold that position since 2011. Marc has been part of
the company since very young years and describes it as a part of living. The other 50 percent of
the company is about to get passed down to family members in third generation, Marc’s cousins.
The previous CEO in Company F was externally appointed and a non-family member, it has been
a variety of family members and external CEOs since the 80s. The main manufacturing plant is
located in Sweden and during the 90s, Company F also acquired a previous sub-supplier in
Sweden. The company also has assembly in China and almost all its sales companies around the
world have a small amount of assembly operations.

4.6.1 Interview with owner-CEO

Marc expressed an enthusiasm to R&D investments already in the beginning of our interview. He
explained that organic growth has been the main focus for Company F and a diversification of
their products have required substantial investments into R&D. He explained that product
intelligence is another one area that has become more and more important to many industries.
This requires continuous investments into the firm’s knowledge base to make their products more
competitive and meet the need of the customer,

“It will increase more and more [R&D investments]. We enter into new fields and
market segments so we need to invest more, both in terms of equipment but also into
competence. It can also be competence in new areas, to make the product more
intelligent. We have a plan for that and that part of our total investment will be higher
and higher” (Marc)

According to Marc, R&D investments represents a higher degree of risk relative other types of
investments but the outcomes from this process is necessary in order to provide the market with
an attractive offering,

“[…] That [R&D investments] can be a very fussy base to stand on or build a case on
but it could be necessary to go that way because that is how you find new areas and
techniques” (Marc)

“That is how you survive today, with new product offering and adding more value to
the customer by knowledge and by product” (Marc)

Marc does not feel any doubt that R&D investment is the right way to go in order to meet the
future in the industry. The importance of this direction is something that all owners understand
and agree upon,

“Even if my cousins are not active in the company they fully understand that is the
way forward and that has always been the priority, I mean we grow, live and survive
by new products” (Marc)

During our conversation with Marc, he several times referred to founder of the company, Marc’s
grandfather (Charles). Charles was already from an early age curious to invent new things.
According to Marc, Company F still today rely on the inventions of his grandfather. Marc showed
a couple of pictures of their products hanging on the wall. He explained that the designs and early
inventions from Charles are still highly relevant for the company,

“In certain areas we have the same with certain modifications but you can definitely
see the original design and where it comes from” (Marc)

Marc elaborated about his grandfather and told us that the heritage after Charles is not only
something that one can notice in the design of the products, also the way Company F deals with
quality matters of their products is related to his way of thinking. He explained that Company F’s
focus on high performance and long lasting products has been there since the early days and this
has strongly influenced how the firm operates today:
“I think what we see in today’s business development is that we have really high performance products with a long lifetime, that is directly connected to Charles’s thinking on how a product should be and behave” (Marc)

Marc added to his discussion:

“What we actually found out was that by having high performance and long life, we have a very positive environmental twist, which is part of our core thinking as well” (Marc)

Marc described that the markets for certain product segments are relatively conservative and characterized by standard products to a larger extent. In those markets, their customers do not necessarily call for upgraded or new products. However, Marc explained that this way of thinking goes into all areas even though certain industries are moving slowly, the decisions to continuous develop new products is still highly relevant. By being proactive, Company F always try to set the scene and lead the competition instead of following the competitors:

“It is up to us, if you want to stay ahead of the competition you have to launch new products even in slow moving areas. You need to be proactive and set the scene both for customers and employees but also for competition. It is sort about keeping the pace and distance towards the competition” (Marc).

When Company F is in the starting phase of a new product development, Marc told us that the end-user plays a crucial role. A close dialogue with the end-user is often necessary even if the product will be rather standard,

"The end-user contact is extremely important in all areas for us I would say, either it is customer unique or a standard product” (Marc)

The conversation with Marc led us into a discussion about the strengths of Company F. He explained about the importance of a solid knowledge base and how this also is closely related to the company’s values,

“The competence is definitely a strength that we have and that we try to nurture to whole time. And that is also falling into our core values that we have as a base for product development and we know that when we launch a product it is something that we can put our name on” (Marc).

Marc linked the core values to the brand name and emphasized the importance to carefully protect and develop what has been built up during their long history,

“You build in your values into the brand name and logo and if of these sort of core values or how the customer sees it start to dilute, it goes extremely quick and what you have built up for 50-60 years can be ruined in half a year” (Marc)
### 4.7 Summary of empirical findings

<table>
<thead>
<tr>
<th>Key findings</th>
<th>Resource-based view</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is, and always has been, the strongest guiding principle for our company (Max, Company A)</td>
<td>•</td>
</tr>
<tr>
<td>That is a heritage in the family and business. (Chris, Company B)</td>
<td>•</td>
</tr>
<tr>
<td>We are learning all the time and being open that we are learning. Fail but learn from it (Bob, Company B)</td>
<td>•</td>
</tr>
<tr>
<td>everyone has the willingness to make better products, it is in the genetics of the firm (Bob, Company B)</td>
<td>•</td>
</tr>
<tr>
<td>We have really skilled people. Computers, everyone can buy but you need human resources and we have also been able to hire skilled people (Chris, Company B)</td>
<td>•</td>
</tr>
<tr>
<td>We have acquired more specialist knowledge than almost anyone else in the industry (Andy, Company C)</td>
<td>•</td>
</tr>
<tr>
<td>I would be happy to see that we spend even more but it is not only about spending money, it is also about finding the right people to carry out the job and that is not so easy’ (Terry, Company D)</td>
<td>•</td>
</tr>
<tr>
<td>If you don’t do mistakes you don’t do any positive things either. Often it is trial and error with many errors (Terry, Company D)</td>
<td>•</td>
</tr>
<tr>
<td>What we have today, what you see today, is the old existing versions that we produce since almost 30 years, it is very well-developed and we have very little problem with it. (Gary, Company E)</td>
<td>•</td>
</tr>
<tr>
<td>It is very limited of engineers that have the experience of fatigue to the level we are at. (Gary, Company E)</td>
<td>•</td>
</tr>
<tr>
<td>Even if my cousins are not active in the company they fully understand that is the way forward (Marc, Company F)</td>
<td>•</td>
</tr>
<tr>
<td>That is directly connected to Charles’s thinking on how a product should be and behave (Marc, Company F)</td>
<td>•</td>
</tr>
<tr>
<td>The competence is definitely a strength that we have and that we try to nurture to whole time (Marc, Company F)</td>
<td>•</td>
</tr>
<tr>
<td>You build in your values into the brand name and logo (Marc, Company F)</td>
<td>•</td>
</tr>
</tbody>
</table>

Table 4: Summary of findings RBV
<table>
<thead>
<tr>
<th>Dynamic capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key findings</strong></td>
</tr>
<tr>
<td>• When we analyze new materials, we put down a lot of work on that [...] If you don't have curiosity, forget it. (Max, Company A)</td>
</tr>
<tr>
<td>• The reason to develop these products is to keep our competitors way behind, we try to be in the front league. (Chris, Company B)</td>
</tr>
<tr>
<td>• We shall not follow the market, we shall take market shares (Chris, Company B)</td>
</tr>
<tr>
<td>• Trends are in the whole world and we take it into our particular niche (Bob, Company B)</td>
</tr>
<tr>
<td>• Looking at what will happen in 5-10 years, what kind of products will it be. (Bob, Company B)</td>
</tr>
<tr>
<td>• Our R&amp;D people go out to meet the R&amp;D departments from our customers (Bob, Company B)</td>
</tr>
<tr>
<td>• We try to find really talented people in order to take the next step into the future (Andy, Company C)</td>
</tr>
<tr>
<td>• There is a lot of different needs in the society, it’s all about electricity in many different ways and environmental friendly production. We are very much involved in that area and the future looks very interesting. (Andy, Company C)</td>
</tr>
<tr>
<td>• Sometimes you feel such a pressure of doing something, that might be a competitor that brought out a machine or function (Terry, Company D)</td>
</tr>
<tr>
<td>• It is not only innovation, you have to adapt as well to new trends (Terry, Company D)</td>
</tr>
<tr>
<td>• Now we are thinking how we can make machines that adjust themselves and understand how they should be set, today we are not too far away from tractors without drivers. (Terry, Company D)</td>
</tr>
<tr>
<td>• we are there ourselves and speak to them and the influence of the customer is more direct (Terry, Company D)</td>
</tr>
<tr>
<td>• The demand is increasing slowly towards heavier containers (Gary, Company E)</td>
</tr>
<tr>
<td>• That is how you survive today, with new product offering and adding more value to the customer by knowledge and by product. (Marc, Company F)</td>
</tr>
<tr>
<td>• If you want to stay ahead of the competition you have to launch new products even in slow moving areas. (Marc, Company F)</td>
</tr>
<tr>
<td>• It can also be competence in new areas, to make the product more intelligent. (Marc, Company F)</td>
</tr>
</tbody>
</table>

Table 5: Summary of findings DC
5 Analysis

In the data analysis, we go back and forth between the empirical findings and the theoretical lenses. Firstly, we analyze the findings with the resource-based view concept to point out the internal influences on the phenomenon. Secondly, we employ the second lens that is dynamic capabilities to investigate the external influence on the phenomenon. Eventually, we conduct a cross analysis between findings and put into use our conceptual framework from chapter 2 to elaborate the relationship between the phenomenon and its influencing factors.

5.1 Resource-based view

For the first part of the analysis, we have applied RBV as a tool to evaluate the companies in terms of their distinctive resources. Through this process we have identified certain assets which are closely related to the context of family firms and others which are important assets regardless of organizational form. In contrast to previous findings, financial constraints and propensity to parsimony (e.g. Carney, 2005; Millet-Reyes, 2004) have not been factors which we have noticed as potential hinders to R&D activities. One possible reason for this absence in our findings is the fact that each case demonstrated profitable operations. Similar to previous studies which have described family firms as rich in intangible resources (Habbershon & Williams, 1999; Sirmon & Hitt, 2003), we have identified certain intangible assets as factors influencing the decision whether to invest in R&D or not. We have identified three important factors which are likely to influence such decisions.

Firstly, we found that the family history can be a trigger for R&D endeavors within certain firms. The heritage from previous generations is an idiosyncratic resource which appears to be an important factor in how R&D is perceived. Interview respondents from company A, B and F showed that the family component plays a central in how the business has been shaped (Chua, Chrisman & Sharma, 1999). In all three cases, this factor from the past was highly relevant in their attitudes towards R&D. For example in Company B, Chris described how both his father and grandfather were driven by a mindset to always improve efficiency and discover new ideas. He explained that this heritage has continued to influence how the company perceives research and development today and described this is one of the reasons why it is so important to the company, “That is a heritage in the family and business. (Chris, Company B)”

In that case, this attitude is also represented in the slogan ‘Never stand still’ which is the basis for a constant development and research for new products. In a similar manner, company A and F referred to the past as a guiding principle for the way forward. In company F, Marc noted that the way the company work today in terms of new product development is connected with his grandfather’s curiosity and way of making a product. A desire to sustain the legacy of the founder can be explained by the concept of socioemotional wealth (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007). From this point of view, the strategic behavior to follow the mind-set of the founder is shown to be influenced by a desire to protect this heritage (Berrone et al., 2010). By classifying history of the firm as an intangible asset that has been accumulated and shaped through generations of ownership, this is an asset which we understand as very firm-specific and unique to the family business context (Habbershon and Williams, 2003). The heritage from the founders is an asset that is idiosyncratic and hardly transferrable into a new context (Dierickx & Cool, 1989).

However, in company C, D and E, we did not find history as an significant factor that has potential to influence their decision of whether to undertake an investment of not. In the companies where we found that history was an important factor which influences their behavior, the third generation or later were in charge of the company. The importance of history thereby appears to be more prominent in firms which are in a later generation. The findings in Zahra (2005) regarding family firms propensity to become more risk-averse and conservative over time and focus less on innovation can therefore be called into question based on our findings.
The second factor that we have identified as an influential factor is organizational culture. Organizational culture have been described as firm-specific and often idiosyncratic (Collins and Montgomery, 1995). Furthermore, Barney (1991) describes organizational culture as an important strategic resource. In company A, Max described how he tries to get the whole company to believe in an innovative behavior. Shirahada and Hamazaki (2013) suggest that an innovative mind-set is likely to influence the creation of new products positively. Similar findings is supported by (Zahra, 2004) who suggests that a culture that generally accepts change and renewal is likely to influence R&D efforts positively. In company D, Terry emphasized the importance of having an environment in the company which tolerates mistakes in the creative process:

“If you don’t do mistakes you don’t do any positive things either. Often it is trial and error with many errors” (Terry, Company D)

This is directly related to another finding in Shirahada and Hamazaki (2013) who argue that an attitude which allows for a trial and error behavior of the R&D personnel is important for innovative achievements. Similar to the approach in Company D, Bob (Company B) expressed the importance of having an organizational culture which allows for learning,

“We are learning all the time and being open that we are learning. Fail but learn from it” (Bob, Company B)

This finding can be compared to previous research which have recognized a managerial mind-set that encourages learning as an important component for an efficient R&D environment (Bettis and Hitt, 1995). In contrast to the examples described above which showed a positive attitude towards R&D investments, Gary (Owner-CEO, Company E), did not see R&D investments as particularly important to the firm as a result of already well-developed products and no little need to develop the existing. Gary expressed his concerns about such R&D investments and new product development:

“It means that when you do something new, you can really only lose. If you have a problem, you have a problem that you never had before” (Gary, Company E)

Previous research have suggested that conservative strategies and an unwillingness to change may become a disadvantage in family firms (Bertrand and Schoar, 2006; Naldi et al., 2007). In the case of company E, it was hard to assess from the interview with Gary if this was an attitude rooted further down in the organization or simply his own opinion.

A third finding from our interviews was the focus on human resources, particularly we put emphasis on specialization. This factor was explained in terms of the importance of finding qualified workers but also the specialized knowledge possessed in the firm. Our findings confirm the importance of human resources which has been discussed in previous findings (e.g. Collins and Montgomery, 1995; Fey and Birkinshaw, 2005). The accumulation of knowledge and experience over a long time has led to a high degree of specialized knowledge. Several of the cases in this study operate in a niche-market. For example Gary (Company, E) explained the following:

“It is very limited of engineers that have the experience of fatigue to the level we are at” (Gary, Company E).

A similar reflection about knowledge was discussed by Andy (Company C),

“We have acquired more specialist knowledge than almost anyone else in the industry” (Andy, Company C)

Specialization can be identified as both an important asset in terms of know-how and experience but in order to carry out further R&D investments, the inflow of new knowledge is important (Fey and Birkinshaw, 2005). For example Terry (Company D) express his concern regarding the inflow of new people:
“I would be happy to see that we spend even more but it is not only about spending money, it is also about finding the right people to carry out the job and that is not so easy” (Terry, Company D).

Similarly, Chris (Company B) described that the inflow of new knowledge is important for a successful R&D department:

“We have really skilled people. Computers, everyone can buy but you need human resources and we have also been able to hire skilled people” (Chris, Company B).

The inflow of new knowledge and the transfer of tacit knowledge across the company are two examples of how specialization is likely to influence R&D investments positively. Most of the firms in the sample possess a high level of initial know-how since this has been developed and refined by previous generations. Previous research have shown that a strong initial know-how is likely to influence R&D undertakings positively (Dierickx & Cool, 1989). Although we identified specialization as an important asset which is likely to influence R&D investments positively, we do not interpret such assets as specific to the family business context. Following that, we argue that specialization is likely to be an important factor for the decision to invest in R&D regardless of organizational type.

From an internal resource point of view, we have identified three major factors. With an emphasis on intangible resources. We have identified organizational culture, history and specialization as important assets which are likely to influence the decision to undertake investments in R&D.

5.2 Dynamic capabilities

From the interviews of R&D endeavors with the six respondents, our findings displayed some activities which we identified as dynamic capabilities. To discuss dynamic capabilities, we referred to the ability of a company to relate to the dynamic environment and to accumulate and exploit both internal and external resources in order to fit into the dynamic landscape as described by Chirico and Nordqvist (2010). In addition, for assisting an analytical process, Teece (2007) breaks dynamic capabilities down into three major parts which are ‘sensing opportunities and threat’, ‘seizing opportunities’ and ‘managing threats and reconfiguration’. Furthermore in dynamic capabilities, Teece (2007) suggests firms to not only conducting search locally, but also externally especially in a fast-moving environment. Hence, this theory assisted us to highlight activities which were conducted to capture external knowledge or resources. Moreover, these endeavors of searching externally supports the creation of what Fey and Birkinshaw (2005) describe as ‘fertile R&D environment’, of which is dependent on inflow of external knowledge. Then, by capturing the activities we were able to extend the analysis to identify these knowledge or resources or other external factors which were potentially influencing firm’s R&D endeavors, particularly R&D investments.

Firstly, our analysis suggests a strong endeavor of detecting and capturing trends from all six respondents. They were well aware about the on-going trends around them and the world, of which they would take into account when developing their products or solutions. Andy (Firm B) exemplified how their products evolved from a simple mechanical-operated product became a technological-operated product. He further added that they were planning to incorporate mobile technology for controlling the product.

“In the 30s a person went down to the basement, after that we inserted a motor in it and after a while intelligence into the motor. [...] As any other business we are looking at the mobile trend” (Andy, Company C)

Similar to firm B, Terry (Firm D) also mentioned about their products which could be operated from a tablet which was given to the customer as a bundled in the product. In addition, not only a tablet-controlled product, but Terry further elaborated that they were also thinking how to produce machines which could adjust themselves.
“If you buy a machine today you get an iPad. And you also have another machine and the iPad is browser for that. You run that machine from the iPad. [...] Now we are thinking how we can make machines that adjust themselves and understand how they should be set, today we are not too far away from tractors without drivers” (Terry)

Meanwhile, Andy (Firm C) discussed about their increased focus toward user and environmentally friendly product design and development.

“There is a lot of different needs in the society, it’s all about electricity in many different ways and environmental friendly production” (Andy, Company C)

And Marc (Firm F) added our findings by discussing about making products more intelligent by discovering competence in new areas.

“It can also be competence in new areas, to make the product more intelligent” (Marc, Company F)

Here, we observed that trends were being seen as opportunities for the firms which require dynamic capabilities to be recognized and incorporated into the business. Moreover, trends seemed to play a role in determining the course of product development in the firm, or even further back before the process of product development that is R&D investments. Hence, we consider trends as an influential factor for the companies in undertaking R&D investments particularly in regard to product or solution development.

Furthermore, there was another indication which we observed during the analysis. We discovered an orientation toward competition within four respondents. They described their engagements in R&D endeavors were in order to outperform the competition and to be the best in the market. This purpose of executing R&D is in line with the literature (e.g. Block, 2012 and Kor, 2006) which argues that investments in research and development (R&D) are often described as essential activities for firms to stay competitive and derive new products and services. However, the other two respondents, firm C and E did not clearly show a strong orientation toward competition. Firm E for instance, Gary described “we are practically alone [in the market]”, and he added it was due to the right choice of channel to approach customers which was to manufacturers instead of to end customers. Meanwhile, firm C, although a slight discussion about competition took place, but Andy (Firm C) did not put a stress on the topic. He elaborated that their relationship with competitors could also be a cooperation partners in some circumstances. Furthermore, Andy provided an illustration of an elephant (major players) with a bird (firm C) on it, which very much exhibited a more symbiotic relationship. The circumstances in firm C and E describe the argument by Scherer (1984) in which he suggests that business sector tend to influence investments in R&D. Departing from this second analysis, we, therefore, consider competition as the second external influential factor in R&D investments.

Eventually, by using dynamic capabilities we have identified two external factors. They are trends and competition which are likely to influence R&D investments.

5.3 R&D investments in family firms

We furthered our analysis into the interrelationship between the aforementioned factors with firm’s R&D endeavors, consequently R&D investments as well. Firstly, we created two groups of firms according to their focus on R&D which are firms with dedicated R&D focus and without dedicated R&D focus. These two groups emerged from our findings from the respondents regarding R&D investments. The first group, firm C and E did not have any dedicated R&D focus within their business, but instead they described R&D as an integrated process (embedded) in their activities.

“We don’t notice it in that way because it’s so integrated in the processes. Everything we do is R&D, I think every product from firm C is unique. We never do two products that look exactly the same. When we approach the customer, we try to create something new every time” (Andy, Firm C)
“We have not had a R&D department at all. We have an engineering division and the majority of the job has been on order designing. You get an order, it has to have some modifications and that is the designing we do. In that way we have done the development as well” (Gary, Firm E)

Meanwhile, the second group, firm A, B, D and F, showed to have a dedicated R&D focus that constantly engaged into the search process and development, and expressed the importance of doing so. Afterwards, we fit them altogether into one table (see Appendix 3), in which we arranged the factors and the related quotes based on the group classifications. Departing from the table, we found that specialization and trends were present in both groups. Trends seemed to positively influence the R&D endeavor and investments except for case of firm E which was not clearly highlighted by Gary (Firm E). However, specialization had two directions of influences toward R&D and it depended on the other factor i.e. competition. In cases where we found competition showing to influence the companies then specialization might positively influence R&D otherwise specialization might be hindering focus on R&D. Firm C and E for instance, as discussed earlier we did not observe any significant concerns regarding competition in the two firms.

The next factor which appeared in both groups was organizational culture. Similar to specialization, organizational culture could also influence R&D in two directions. In firm E, we found an existence of risk-aversion from Gary’s statement (see Appendix 3), and at the same time firm E did not exhibit a focus engagement toward R&D. Meanwhile, in the other group we found more of the opposite where the firms displayed a more failure-tolerating and continuous learning environment, and also they had a more dedicated R&D focus. Lastly, family history was found to exist in the group which had a dedicated R&D focus. The family history was described in context such as inventive spirit and curiosity of the founder, of which until today is still preserved as heritage within the business. The strongest was exhibited in firm B and F where the family history was crystallized in their corporate values as in firm B, Chris mentioned "Never stand still".

Ultimately, we adapted our framework to illustrate the relationship between the factors and R&D investments as follow,

![Figure 2: Revised conceptual framework (source: own)](image-url)
6 Conclusion

This last chapter in the thesis is divided into four parts. Firstly, it starts with the conclusion from the study, then it is followed by presenting the theoretical and practical contribution. Afterward, a discussion of limitation is presented. Eventually, suggestions for a further research closes the chapter.

This study attempted to provide a new perspective about R&D investments in family firms which some extant studies argue that family firm tend to invest less (e.g. a literature review by De Massis, Frattini & Lichtenhaler, 2013) or even tend to avoid R&D investments (Schulze, Lubatkin and Dino, 2002) although R&D investments is essential for sustaining competitive advantage of a firm as it facilitates innovation (Ettlie, 1998; Adams, Bessant & Phelps, 2006). Nevertheless, under certain circumstances family firms would also prefer R&D investments (e.g. Chrisman and Patel, 2012; Craig & Moores, 2006). Departing from these knowledge, we were brought by our curiosity to explore the phenomenon from a new geographical context, moreover, we offered new viewpoint of R&D investments by exploring how family firms perceive R&D investments in the first place. Additionally, we furthered the study to identify influencing factors of R&D investments. Thence, we developed a conceptual model which illustrated the phenomenon and the factors which potentially influenced the phenomenon.

By using the empirical findings, we were able to build not only theoretically but also empirically grounded analysis to provide answers to the research questions. To answer the first research question, we divided the firms into two groups based on their focus of R&D. The first group was the firms without a dedicated R&D focus or firms that perceived R&D as embedded activity, while the latter was the firms with dedicated R&D focus. According to the way they perceived R&D investments, they consequently put different emphasis on R&D investments. The first group was rather reactive toward R&D, while the latter group was more proactive. These differences could be explained by the five factors from our findings which also are the answer for the second research question. The first two factors which were present in almost all firms, trends and specialization, helped explaining the early engagement (without dedicated focus) of R&D in the firms. However, unlike trends, specialization might potentially lead to negative propensity toward R&D investments because of the competitive advantage gained from being specialized and knowledgeable in certain area. However, when competition comes into play, it might shift the circumstance by encouraging the firm to leave its "comfort zone", thus would encourage R&D endeavors, in particular R&D investments especially when the firm aims to lead in the market. While organizational culture could also be a catalyst for firms to focus on R&D, but it is very dependent on the culture instilled in the firm whether or not it would encourage R&D. Firms with risk aversion, as suggested by literature and also found in one of our case would distance the firm from R&D investments. On the other hand, firms that showed continuous learning and failure tolerating within the culture tended to put more focus on R&D. And the last one, family history, which was found in three cases suggested a positive influence toward R&D investments. The inventive behavior of the founder or former generations was implanted in the family history, and being preserved by the current generations as corporate identity or guiding values, of which contributed positively toward R&D investments in the firm.

6.1 Contributions

Our research contributes both theoretically and practically. In the theoretical contribution, we firstly provided an answer to a call for more qualitative/interpretive research in the field of family business from Nordqvist, Hall, & Melin (2009). Secondly, we contributed to the literature of family business and R&D investments by an in-depth understanding of how family firms perceive and what factors are likely to influence their decision to invest or not. Lastly, most of the previous studies on the impact of family ownership on R&D investments have been conducted in a context outside of Sweden with a focus on listed firms, hence, through our study we added new perspective from Swedish non-listed firms which enabled us to provide further insights from a specific country.
In addition to the theoretical contribution, we also provided a practical contribution through the findings of the influential factors. Furthermore, as we provided the analysis of how the factors influenced R&D investments in our cases, we believe that firms could gain an insight on how to leverage the factors, particularly the internal ones, to their own benefits and at the same time the firms could be mindful of their potential negative influences, thus could anticipate with an appropriate handling.

6.2 Limitations

In regard to limitations of our study, we were fully aware of several things which could potentially be improved or addressed in the future. Firstly, even though all our cases were all manufacturing industry, however, their products competed in different industries. Therefore, potential differences among industries’ R&D intensity might appear within our samples which could lead to us to discriminatory conclusions. Secondly, although our respondents were owner or owner-manager, our findings were limited to the perception of one company member. Hence, it might limit our ability to fully capture a general perception of the firm since the understanding was limited to one person (except for company B). Finally, this study was limited by short period of time, thus we were not able to follow how the perception might evolve over time which could be addressed with a longitudinal study.

6.3 Further research

Findings from our sample show that all firms both have some processes which can be identified by our definition as ‘research and development’ and actually do substantial investments into this area. However, out of all people that we spoke to, not a single company had a certain separation between general spending and R&D expenditures. Our findings indicate that academic concepts do not necessarily appear the same in the mindset of the interviewees which may lead to misleading answers and thereby results. By saying that, we argue that previous research have only scratched the surface of this novel topic and this calls for further research to be done which takes into account differences in how companies perceive R&D. By adding further variables when conducting a study on R&D spending, this can increase the precision in the findings in order to understand whether family firms are really different in terms of R&D investments. For example Munari et al., (2010) discuss the issue of voluntary disclosure of R&D investments in the EU. The voluntary nature of R&D disclosure in annual reports may have implications for the numbers provided which may make a comparison biased since a company could provide very opportunistic numbers or a modest assessment on the other extreme which makes it hard to compare.

Moreover, our study provides empirical finding from only one side of the coin, family firms. In order to find potential differences relative to non-family firms, this category has to be included to fully understand if the perception of R&D investments differs between the two organizational forms. We suggest further research to provide a qualitative comparison in order to increase the understanding about the previously claimed assumptions that family firms tend to invest less in R&D. We believe that the private nature of many family firms has to be taken further into account before calling this a general assumption.
References


Farquhar, J. D. (2012). *Case Study Research for Business*. 1 Oliver’s Yard, 55 City Road, London EC1Y 1SP United Kingdom: SAGE Publications Ltd.


Appendices

Appendix I: Definitions

Family business

The aim of family business research is to contribute with knowledge and understanding about this distinct organizational form (Melin, Nordqvist, & Sharma, 2014). Family firms are a primary source of economic growth in free economies around the world (Poza, 2009). Although a majority of family firms are small in size, this category also represents some of the largest companies worldwide (Litz, 1995). This creates a very heterogeneous group of businesses as they come in many forms (Dekker, Lybaert, Steijvers, Depaire, & Mercken, 2013). Researchers use several different measures to determine and distinguish family ownership from non-family firms (Astrachan & Shanker, 2003). Astrachan, Klein and Smyrnios (2002, p.46) note that "There is no clear demarcation between family and non-family businesses’. For that reason, the definition of a family firm has been debated since the emergence of the field and there is no widely accepted definition within the research community (Brundin et al., 2014; Handler, 1989; Litz, 1995; Sharma, 2004). These difficulties among researchers to agree upon a common definition illustrate the family firm heterogeneity (Chua, Chrisman, Steier, & Rau, 2012).

The heterogeneity and definition topic have implications when scholars compare different results in family business research (Chua et al., 2012). For example, Miller, Le-Breton Miller, Lester & Cannella (2007) present 28 different definitions used around the world only in the context of family business and firm performance. Klein, Astrachan and Smyrnios (2005) have presented an attempt to develop a scales to measure family involvement in order to explore and define family firms along the continuum and distinguish which firms are not. Measures often include criteria such as controlling shareholder’s direct or indirect voting rights or involvement in the strategic management of the firm (Astrachan & Shanker, 2003; La Porta et al., 1999) while some definitions include a focus on later generations involvement (Pérez-González, 2006). Shanker & Astrachan (1996, p.108) summarize common definition criteria which are used by family business scholar, such criteria may include “percentage of ownership, voting control, power over strategic direction, involvement of multiple generations, active management by family members” which are frequently used by scholars in the field of family business research. We utilize the definition suggested by Miller, Le-Breton Miller, Lester & Cannella (2007, p. 836) who define a family firm as “one in which multiple members of the same family are involved as major owners or managers, either contemporaneously or over time”.

Research and development (R&D) definition

Research and development (R&D) - R&D endeavors are defined as ‘creative work undertaken on a systematic basis to increase the stock of knowledge, and use this stock of knowledge for the purpose of discovering or developing new products, including improved versions or qualities of existing products, or discovering or developing new or more efficient processes of production’ (United Nations, European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, & World Bank, 2009, p. 119)
Appendix 2: Interview protocol

Introduction

Self-introduction
We, Axel Finstorp & Ferdinand Padang, are master students in Business Administration and currently in the final term of our study where we are writing a master thesis to fulfill our degree requirement. Hence, we conduct a research with a topic of R&D investments in family firms.

Organization
Jönköping University, Jönköping International Business School - Faculty of Business Administration

Purpose
- The main aim of our research is to study about “how family firms perceive R&D investments in the first place which is aimed to provide a new viewpoint on R&D investments in family firms. Additionally, to investigate factors which have influence on whether or not family firms undertake R&D investments”
- The study is intended to contribute both academically and empirically, means in the end we aim to construct a theoretical model which

Reasons for choosing the respective respondents
- Family firms (according to the definition we have),
- Product based business,
- Access to conduct interview

Ground Rules

Length of time
The length of time for this interview will follow the appointment made beforehand between the interviewer and the respondents, however, early termination is possible by considering any emerging concerns from both parties, the interviewer and the respondents.

Participation
The participation in the research is voluntary. Therefore, you may freely accept or decline to partake in it. Additionally, you may freely decide whether or not to answer a question.

Safety & Confidentiality of information
There are several points we need to inform regarding the safety of information (data) which are as follow,
- The interview will be recorded (audio) for transcription purpose with a permission from the respondents by signing a consent form.
- Any name(s) e.g. organizations, respondents, etc. which are considered sensitive to be shown will be replaced by codes when required by the respondents.
- The collected information from the interview will be treated confidentially and will only be used for the research purpose.
- In the end of the research, the collected data (audio) will be destroyed.
Questions

Business & Competition

- Could you elaborate about your business and company?
- Do you see your company as a family business? Why?
- What impact has family business had in your decision making?
- How would you explain about competition in your business?
- How has the competition changed in recent years?
- How do you see your company within the competition? As a family firm?

R&D investments

- What do you think about R&D investments?
- Does your business operate in an R&D intensive industry?
- How do you see R&D investments relative to the other types of investments?
- What would make you invest in R&D or not? And why so?
- As a family firm, does it influence your decision? How so?
- Are there any factors influencing R&D investments in your company? Could you further discuss about it?
- How do you execute R&D and/or R&D investments?
- What do you think of knowledge in terms of R&D?

Competitive strategy & resources

- Is R&D a part of your overall corporate strategy? Why?
- How do you measure it?
- How do you see your company’s strength and weakness in term of resources and capabilities?
- Could you think of any uniqueness?
- How would you compare that to your competitors?

Closing

Thank you

Thank the respondent and ask whether he/she is available should the research needs more information in the future e.g. additional session or related archival documents

Questions from respondents

Allow the respondents to express any inquiry regarding the research
### Appendix 3: Cross analysis table

<table>
<thead>
<tr>
<th>Without dedicated R&amp;D focus (C &amp;D)</th>
<th>Capturing new trends (Opportunities)</th>
<th>Interpreting competition (Threats)</th>
<th>Family history</th>
<th>Organizational culture</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>There is a lot of different needs in the society, it’s all about electricity in many different ways and environmental friendly production. We are very much involved in that area and the future looks very interesting (Andy, Company C) The demand is increasing slowly towards heavier containers (Gary, Company E)</td>
<td>-</td>
<td>-</td>
<td>It means that when you do something new, you can really only lose. If you have a problem, you have a problem that you never had before (Gary, Company E)</td>
<td>We have acquired more specialist knowledge than almost anyone else in the industry (Andy, Company C) It is very limited of engineers that have the experience of fatigue to the level we are at (Gary, Company E)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>With dedicated R&amp;D focus (A, B, D, F)</th>
<th>Capturing new trends (Opportunities)</th>
<th>Interpreting competition (Threats)</th>
<th>Family history</th>
<th>Organizational culture</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>There is a change of the market, we step in now and are introducing a totally new series of sports-safety shoes (Max, Company A) Trends are in the whole world and we take it into our particular niche(Bob, Company B) It is not only innovation, you have to adapt as well to new trends(Terry, Company D) That is how you survive today, with new product offering and adding more value to the customer by knowledge and by product (Marc, Company F)</td>
<td>The reason to develop these products is to keep our competitors way behind, we try to be in the front league (Chris, Company B) Sometimes you feel such a pressure of doing something, that might be a competitor that brought out a machine or function (Terry, Company D) If you want to stay ahead of the competition you have to launch new products even in slow moving areas (Marc, Company F)</td>
<td>This is, and always has been, the strongest guiding principle for our company (Max, Company A) That is a heritage in the family and business (Chris, Company B) That is directly connected to Charles's thinking on how a product should be and behave (Marc, Company F)</td>
<td>We are learning all the time and being open that we are learning. Fail but learn from it (Bob, Company B) If you don’t do mistakes you don’t do any positive things either. Often it is trial and error with many errors (Terry, Company D) Even if my cousins are not active in the company they fully understand that is the way forward (Marc, Company F)</td>
<td>We have really skilled people. Computers, everyone can buy but you need human resources and we have also been able to hire skilled people (Chris, Company B) The competence is definitely a strength that we have and that we try to nurture to whole time (Marc, Company F)</td>
</tr>
</tbody>
</table>