# Management of Technology

# Family businesses and knowledge transfer



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Petra Warnar Student no. 1286781



Master Program Management of Technology

# **Family Businesses and**

# **Knowledge Transfer**

# How to survive to the next generation

Master Thesis

Petra Warnar 1286781 pwarnar@gmail.com

Chairman of the Graduation committee: Prof. Dr. Cees P. van Beers, Delft University of Technology

Supervisor: Dr. Ing. Victor E. Scholten, Delft University of Technology

Co-readers: Dr. Ir. Sebastiaan A. Meijer, Delft University of Technology Dr. Marta Berent-Braun, Nyenrode Business Universiteit

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### PREFACE

"The first generation lays the foundations for a thriving business; the second builds on it, the third generation squanders it." As the second generation in our family business this Chinese saying is good news for me (and possibly not so good news for my future generation). Still, the insecurities so common to successors are not uncommon to me either. Will I be able to fill my father's shoes? Will I be able to maintain the business instead of destroying it?

Family business and the families running them are unique. The interaction between the family and the business provide it with special characteristics that are part of the reason that family businesses thrive and survive even in the toughest of times. Nevertheless, not all family businesses are as lucky and many perish due to succession. Succession is one the most difficult and risky periods in the lifetime of a family business. It is not just about the transfer of management, but also the transfer of leadership and knowledge accumulated by the founder of the business. But how can family businesses transfer knowledge to the next generation and how important is this for the continuity of the company? Although much is written concerning transfer of ownership and all aspects surrounding this process, little attention has been given to the subject of knowledge transfer. But it is exactly these questions about knowledge transfer that our family is currently struggling with. This is why I chose the knowledge transfer between predecessor and successor in technical family businesses as the topic for my master thesis (see also Appendix IV: My personal motivation for this research).

This thesis would never have been a reality if it wasn't for the help and support of others.

First of all, I would like to thank Nyenrode Business Universiteit and in particular Prof. Dr. Roberto Flören and Dr. Marta Berent-Braun. They provided me with the opportunity to join their research and have made this project possible. I would also like to thank them for their continuous support, good advice and knowledge about the subject which have been essential for writing this thesis. A special thanks goes out to Marta for being my 'Thesis and SPSS survival guide'.

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### **EXECUTIVE SUMMARY**

More than half of all established companies in the Netherlands are family businesses. This distinctive group does not only dominate the Dutch economy, they make a large contribution to the global economy as well. Family businesses are unique. Family and business interact and provide these firms with special characteristics which help them outperform non-family businesses. To use this unique bundle of resources strategically and develop a competitive advantage, knowledge is required. This knowledge is often found in the mind of the founder or entrepreneur. And although founders and general managers of family firms often have a long tenure of more than 20 years, for each of them a time will come when he<sup>1</sup> needs to step down from his position. Because most of the unique knowledge resides in the individuals mind it is easily lost when the manager leaves the company. It is therefore important for predecessors to transfer this knowledge to the next generation and ensure the continued performance of the family firm.

Succession is one of the most difficult periods in the lifetime of a family business. The topic has been frequently researched in the academic literature; however, not much has been said about the knowledge transfer from predecessor to successor during succession. Although some theoretical work is written that describe this process, there is still no empirical evidence that proves the relationship between knowledge transfer from predecessor to successor to successor and post-transfer performance. Therefore, the main focus of this research is to empirically test this claim and provide an answer to the following research question:

### To what extent does the transfer of internal knowledge between predecessor and successor influence the post-transfer performance in a technical family business?

The literature on family businesses, succession and knowledge management have provided the basis for this research. First of all, the knowledge literature provides insight in the different types of knowledge that can be transferred, namely tacit and explicit. The transfer of both is essential for the success of the company; however, for each type of knowledge there are specific transfer practices which are more effective. This resulted in the exploration of the relationship between different knowledge transfer practices used and the post-transfer performance. Nonetheless, the extent of knowledge transfer was included in the study since this could mediate the relationship. Post-transfer performance is measured by two separate constructs to ensure both quality and effectiveness of the succession is included. These two factors are: Financial performance and Organisational change.

The data for this study was collected by means of a telephone interview with the managing director of the firm in the spring of 2011. The random sample included 74 respondents all working in a family business in the province of Zeeland who have experienced a transfer of management within the last 5 years. To analyse the data factor, correlation and multiple regression analyses were conducted by the use of SPSS software.

The results of the study show that the more methods to transfer knowledge are used, the more knowledge is actually transferred. This indicates that it is helpful to implement knowledge transfer

<sup>&</sup>lt;sup>1</sup> For readability purposes he or his will be used to indicate both male and female predecessors and successors.

practices and to use a variety of transfer practices. Moreover, it was found that the more different knowledge transfer practices are used, the less the organisation will change after transfer. Organisational changes like innovations and improvement of process efficiencies are viewed as an important driver of growth of the organisation. The use of knowledge transfer practices prevents an organisation to change and might ultimately damage the performance of the company. The use of informal knowledge transfer practices like informal conversations or when working together is more threatening for the organisational change than formal practices. It might be that the close personal contact between predecessor and successor leads to a transfer of aversion to change which is common amongst managers of family businesses. It should be noted though that the research did not indicate the transfer of internal knowledge to have any influence on the financial performance in the post-transfer period. Other research has already indicated that it is difficult to link knowledge management inside the company to the financial performance of the company.

The study also shows that a successor with both a management and a technical education is proven to be more profitable in the post-transfer period than successors who had only completed either one of these studies. These results suggest that acquiring knowledge from external sources might be more important for a profitable post-transfer performance than obtaining knowledge from the predecessor.

Furthermore, non-technical businesses performed significantly better financially in the post-transfer phase than technical companies. Environmental conditions such as the financial crisis could have influenced this result.

To conclude, the focus for successors should lie on gathering knowledge from external sources like through education. More attention by educators for family businesses and in particular the succession process can help successors be better prepared and make the post-transfer period a success. However, the transfer of internal knowledge cannot simply be forgotten since the research also does not reject the hypothesis that was created. The contradicting results that this research has provided make it even more necessary for the academic world to pay more attention to the field of knowledge transfer in family businesses. It also shows that interesting new results can be obtained when the field of research is widened to explore other areas connected to family businesses.

### **1** INTRODUCTION

### 1.1 INTRODUCTION TO THE TOPIC

Family businesses make up about 69% of all established companies in The Netherlands and are responsible for over 40% of total employment opportunities and 50% of its Gross National Product making it one of the largest and most influential sectors in the country [Verhaar, 2010; Flören, Uhlaner & Berent-Braun, 2010]. Over the years family businesses have shown to be more resilient in times of crisis and outperform their non-family counterparts [Anderson and Reeb, 2003; Flören and Jansen, 2005]. This makes the family firm a stable employer and trustworthy business partner [Flören & Jansen, 2005].

The significant contribution to the Dutch economy and good overall performance of family businesses has increased interest in the topic with academic and research communities. Special interest is shown in the unique characteristics of family businesses that have often been identified as the reason for the enhanced performance but also for the downfall of many family businesses [Gersick, Davis et al., 1997]. These characteristics result from the interaction between the family, the business and the ownership systems. While in general these systems tend to operate separately, in a family firm they overlap, interact and are dependent on one another [Tagiuri and Davis, 1996]. The involvement of the family system introduces emotions greatly increasing the complexity within the family firm.

One of the processes influenced by the involvement of the family system is succession. Succession can relate to change in ownership or management, but in two third of the cases in the Netherlands both types of succession take place at the same time [Meijaard & Diephuis, 2004]. The owner who transfers the company is referred to as the 'predecessor' while the person taking over is referred to as the 'successor'. In family firms the ownership and management is often transferred to one or multiple family members [Beek, 2004]. The decision to transfer to a family member is often an emotional choice rather than a rational choice. This differs from non-family firms where the decision is influenced by the business system rather than the family system and thus more rational and based on factors as work experience, knowledge and suitability of the candidate(s) [Flören and Jansen, 2005].

Transferring the ownership and management of a company is a difficult, time-consuming and risky task [Barach and Ganitsky, 1995] bringing a period of change and uncertainty which many companies do not survive. Succession is rated as the second largest cause for closure of businesses [Flören and Jansen, 2005]. Of family businesses in particular only one-third of family businesses survive to the second generation [Stavrou and Swiercz, 1998]. The low survival rate of family businesses after succession has sparked the interest of the academic research community. The topic has been addressed by researchers since the 1980's and has, over the years, become the most researched topic in the field of family business research [Chrisman, Chua et al., 2003].

Most research surrounding the topic of succession are focused either at the 'technical part' or the 'social part' [Beek, 2004]. The technical part includes issues like for example the development of formal succession plans and legal and tax matters that family business are faced with [e.g. Kets de Vries, 1993]. The social part concerns among others sibling rivalries, trust and communication among

family members, the relationship between predecessor and successor and the preparation of the heirs [e.g. Kets de Vries, 1993; Sharma, 2004].

A topic that has become increasingly important in today's economy but often neglected in family businesses research is knowledge management. Researchers and companies are progressively aware of the competitive advantage knowledge can provide [Nonaka and Takeuchi, 1995]. Especially the tacit knowledge acquired through experience only existing in the heads of employees is extremely valuable but also difficult to transfer. This knowledge is often lost when the employee leaves the company. Therefore, research is dedicated to find ways to transfer knowledge from one person to the other and retain this knowledge inside the company. During succession in a family business the knowledge from the predecessor also has to be transferred to the successor. However, empirical research into this subject is lacking. Thus, the aim of this paper is to contribute to the existing knowledge within the field of research into family businesses and to enrich the current discussion amongst the importance of knowledge transfer from predecessor to successor during the transfer of management on the continued performance of the family firm.

### 1.2 MOTIVATION FOR RESEARCH

Succession is one of the most critical stages in the lifetime of any company. In family businesses however, not only managerial problems are involved but emotional aspects also come to play due to the involvement of the family system within the company [Flören and Jansen, 2005]. Barach and Ganitsky [1995] describe succession as "the lengthiest strategic process for family firms". It is therefore not surprising that only one-third of family businesses survive to the second generation [Stavrou and Swiercz, 1998], which is believed to be caused by the lack of succession planning [Meijaard, Uhlaner et al., 2005]. Research in the Netherlands shows that, on average, Dutch firms plan their transfer only 1 to 1.5 years in advance [Flören, Uhlaner et al., 2010]. Many of the owners see the process of succession as a task to be done in the future and thus not important at the moment. Moreover, by bringing up the subject other family members are afraid predecessors might feel confronted with their own mortality and unwillingness to make difficult decisions [Aronoff and Ward, 1992].

Harris [2007], however, shows that even an extensive succession plan is not a guarantee for continuity of the family business. He argues the problem lies in the type of succession plan that was used, indicating traditional plans are not sufficient for transfer in a family business. Most of the traditional plans focus on the transfer of attributes belonging to the ownership and business system but leave out characteristics that provide the strengths of the family system. One of those unique characteristics is the firm- specific knowledge that is partly formed by the interaction between the family and business system and embedded in the owner-manager's mind [Habbershon and Williams, 1999; Cabrera-Suárez, De Saá-Pérez et al., 2001; Bracci and Vagnoni, 2011]. Retaining this knowledge within the firm when the predecessor decides to step down is one of the major concerns in the succession process [Bracci and Vagnoni, 2011].

The knowledge-based theory of the firm describes knowledge as the most important and fundamental resource providing a company with the means to be innovative and stay competitive in the market [Grant, 1996]. Creating, sharing and transferring this knowledge within the firm is important for maintaining its competitive position. This is even more applicable to firms in

technological sectors. According to Ghingold and Johnson [1997, p.273] technical knowledge is "at the foundation of competitive advantage". Technical knowledge and skills represents an important asset that can be found in the minds of employees and managers within the firm [Ghingold and Johnson, 1997]. Because of the importance of technical knowledge for the competitiveness of businesses and the researcher's personal background in technology, this research will focus on family businesses in technology sectors.

As a research in the US shows, "management incompetence of the business owner" is the main cause of 66% of bankruptcies [Dun and Bradstreet, 1991, as cited in Chirico and Laurier, 2008]. It is argued that this incompetence is caused by a lack of knowledge. These results show that the failure of family businesses to survive to the next generation is not just lack of succession planning but can also be caused by lack of transfer of knowledge from generation to generation [Cabrera-Suárez, De Saá-Pérez et al., 2001]. Knowledge can be seen as an important contribution to the continuity of a family business. Cabrera-Suarez, et al. [2001, p. 39] even argue that the "family firm's specific knowledge, as well as the ability to create and transfer it, are considered a key strategic asset that may be positively associated with higher level of performance." Although this relation has been suggested, the empirical research to support this claim is lacking. Therefore, the current study is aimed at finding the relationship between knowledge transfer of predecessor to successor and the post-transfer performance of the company.

### 1.3 RESEARCH PROBLEM

Research indicates the lack of or inadequate planning for succession as the most important cause for the low survival rate amongst family businesses [Stavrou and Swiercz, 1998]. Harris [2007], however, shows that succession planning is not a guarantee for the continuity of the company, which leads to the conclusion other factors might also influence the continuity of the company after transfer. Several studies indicate the knowledge of the predecessor to be crucial for the success of the family firm and therefore transfer of this knowledge is seen as the key to a continued performance of the family firm after management transfer [Cabrera-Suárez, De Saá-Pérez et al., 2001].

Knowledge is becoming more and more important in today's economy and is seen as the key competitive advantage for any business [Nonaka and Takeuchi, 1995; Smith, 2001]. An entrepreneur in a family business spends about 24 years as general manager in the company before he/she decides to transfer the company to the next generation [Astrachan and Kolenko, 1994]. During these 24 years the predecessor gains and acquires a large amount of knowledge that forms a key part of the company's strategic position within the market [Alavi and Leidner, 2001]. But what happens with this knowledge when transfer in management takes place? Is this knowledge transferred to the successor? And how much of an influence does this knowledge transfer have on the innovation and the performance of the company after the transfer?

### 1.4 RESEARCH QUESTION AND SUB QUESTIONS

The research question to be answered in this study is:

### To what extent does the transfer of internal knowledge between predecessor and successor influence the post-transfer performance in a technical family business?

To assist in answering the main question, the following sub-questions will be addresses in this paper:

- 1) What types of internal knowledge are transferred between predecessor and successor?
- 2) What transfer practices are used to transfer the internal knowledge?
- *3)* What influence do the different types of knowledge transfer practices have on the post-transfer performance?
- 4) What influence does the extent of internal knowledge transfer have on the relationship between knowledge transfer practices and post-transfer performance?
- 5) What influence does the sector have on the link between knowledge transfer and posttransfer performance?
- 6) What influence does the duration of succession have on the link between knowledge transfer and post-transfer performance?
- 7) What influence do successor characteristics have on the link between knowledge transfer and post-transfer performance?

Further explanation of the terms used above:

<u>Internal knowledge</u>: The knowledge acquired from sources inside the firm, e.g. employees. This knowledge is the opposite of external knowledge where the sources are external to the firm, e.g. competitors or education.

<u>Transfer practices</u>: Methods to transfer knowledge, e.g. documents, training, conversations or apprenticeship.

<u>Post-transfer performance</u>: Financial and organizational performance after the transfer of management has taken place.

<u>Successor characteristics</u>: Characteristics of the successor which includes for example work experience, education, age and type of relationship between the successor and the predecessor.

### 1.5 SCOPE OF STUDY

The general aim of this study is to examine the relationship between knowledge transfer between predecessor and successors in family businesses and the post-transfer performance. Due to their special makeup and important role in the global economy a special focus is placed on family businesses. Although some reference will be made in the theoretical part of this study to non-family firms, only family businesses will be included in the data collection. The reference to non-family businesses.

Moreover, the study focuses particularly on the knowledge transfer between predecessor and successor. The bulk of research within the topic of knowledge management is concentrated on transfer of knowledge between employees or between organizations. The relationship between predecessor and successor, especially in family businesses, might differ and influence the importance of the relationship between knowledge transfer and company performance.

Special attention is given to technical family businesses although non-technical family businesses are included in the research. Technology is becoming more and more important in today's economy. The advancements and developments in the field increase the complexity of these technologies and companies require more specific knowledge to handle their technical processes. And since technical

knowledge is still the main ingredient for developing a competitive advantage, in this research emphasis is given to the knowledge transfer in technical family businesses.

### 1.6 RESEARCH METHOD

### 1.6.1 SAMPLE

The empirical research consists of a telephone interview randomly conducted by an external organisation among all firms with economic activity in the province of Zeeland, the Netherlands. In total 778 companies were contacted and screened after which only 204 companies were selected to join the research. These 204 companies were chosen because screening showed that all could be defined as a family business and have had a transfer in management during the last 5 years, is currently transferring or will transfer management within 7 years in the future. For this study only family firms who have had a transfer of management within the last 5 years are included which leaves 74 respondents in the sample.

### 1.6.2 QUESTIONNAIRE

The questionnaire was constructed in such a way that both a predecessor and a successor could participate in the study. The survey existed of 10 separate parts: screening for family businesses, screening for transfer of management, general information, transfer of management, transfer of ownership, goals of the company, knowledge transfer from predecessor to successor, financial performance and respondent characteristics. To measure knowledge transfer from predecessor to successor to successor, organisational change and financial performance, respondents were asked to choose one of the options on a 5-point Likert scale (see also Appendix II: List of variables).

### 1.6.3 DATA ANALYSIS

To analyse the collected data several statistical techniques like factor analysis, correlation analysis and regression analysis were used. All analyses were conducted using SPSS software to test the hypotheses.

### 1.7 THESIS OUTLINE

The thesis is constructed as follows:

First, chapter 2 focuses on the concept of family businesses. The chapter starts with an introduction to statistics of family businesses in the World, Europe and the Netherlands. This is followed by a discussion concerning different definitions of family businesses that exist and a description of the 'three-system model'. The chapter concludes with an explanation of the uniqueness of a family firm.

Then chapter 3 discusses issues regarding succession in family businesses in particular. First an explanation is given of four reasons for a succession process to be accelerated. Then a short description is given of what options a family firm has for transferring the company after which different phases in this process are highlighted in 'Succession as a process'. Finally, it is concluded with a discussion about what a successful succession entails.

Chapter 4 presents the concept of knowledge management. It starts with a description of the importance of knowledge, what knowledge is and what types of knowledge can be identified. This is followed by a presentation of the concept of knowledge management and a more in-depth description of knowledge sharing. The chapter ends with a short description on the unique aspects of knowledge within a family business.

Chapter 5 is focused on technology and explains what it entails. It also includes a listing of the sectors that can be identified as technological sectors according to the definition presented in the start of this chapter. This is followed by a description of the statistics surrounding these sectors and ends with a discussion about the importance of knowledge in a technical environment.

Chapter 6 states the theoretical framework and the hypotheses of the study.

Chapter 7 focuses on the methodology of the empirical research. First a description of the sample is given which is followed by a description of the variables used in the research. It ends with an explanation on how the data was analysed.

Chapter 8 presents the results that originate from the statistical analyses conducted on the data collected.

Chapter 9 discusses the results presented in chapter 8, limitations of the research, provides directions for future research and indicates the practical implications of the findings.

Finally, chapter 10 ends this paper by drawing conclusions on results previously presented and provides an answer to the research questions.

### 2 FAMILY BUSINESSES

### 2.1 STATISTICS

Family businesses are an important part of the world's economy. Although the exact number is hard to predict due to differences in operational definitions used in family business research it can be estimated that at least 65% of all businesses worldwide are a family firm [Flören and Jansen, 2005; Casson, Yeung et al., 2008]. Research conducted in 2010 shows a similar number for the Netherlands where 69% of all businesses is labelled as family firm<sup>2</sup> making it the largest and most influential sector in the country [Flören, Uhlaner et al., 2010].

With these large numbers, the dominant group of family businesses is a significant contributor to the economic performance of a country. The family businesses in the Netherlands contribute 53% to the Dutch Gross Domestic Product and employ 49% of all working people in the country [Flören, Uhlaner et al., 2010]. Most of the family businesses are classified as small to medium sized enterprises. This statement is not only applicable on European level but also on country level [Jones and Zeitlin, 2008; Mandl, 2008]. In the Netherlands about 99% of all family firms have less than 100 employees, nevertheless, it has to be noted that for all Dutch companies that have more than 100 employees, 38% can be identified as a family business [Flören, Uhlaner et al., 2010]. Moreover, some of the largest and longest existing companies in the world are family firms. IFERA [2003] indicates 37% of the Fortune's 500 can be classified as family firms. Examples can be found in all parts of the world, like Wal-Mart (USA), Benetton (Italy), IKEA (Sweden), Samsung (South-Korea), but also the large international corporations of Bavaria, C&A and Heineken who are controlled by Dutch families are large family firms [Casson, Yeung et al., 2008; Jones and Zeitlin, 2008].

Although family businesses are active in all sectors in the country, in some areas their presence is more dominant than in others. European estimates show that the majority of the family firms can be found in traditional and labour-intensive sectors like agriculture, construction or manufacturing but are underrepresented in the financial services sector [Mandl, 2008]. The Family Business International Monitor even states 40% of all family firms to be present in three sectors: Manufacturing, Construction and Wholesale [FBN International, 2008]. In the Netherlands family firms are the majority in all sectors, except financial services sector with the highest numbers found in agriculture (87%), other services<sup>3</sup> (86%) and wholesale and retail (79%). Construction (69%) and Manufacturing (65%) are not far behind and still have the majority of enterprises being family businesses [Flören, Uhlaner et al., 2010]. Family firms are therefore an important part of the technical sectors in the Netherlands.

A survey performed by PricewaterhouseCoopers [2008] also indicates that the lifespan of family businesses is quite long. 90% of the companies in their sample which contained companies from 28 countries across the world have existed longer than a decade and even 38% are already around for at least 50 years. Some researchers even claim that family businesses are on average older than their

<sup>&</sup>lt;sup>2</sup> Based on the definition of a family enterprise developed by the GEEF (European Group of Owner Managed and Family Enterprises). Excluding the self-employed.

<sup>&</sup>lt;sup>3</sup> Other services includes for example: temporary work agencies, engineering service, law offices, research and computer service agencies.

non-family counterparts [Mandl, 2008]. Flören, Uhlaner et al. [2010] have shown however, that in the Netherlands no significant differences between the age of a family business and a non-family business can be found. This does not mean family businesses 'die' young, the oldest family business in the Netherlands stems from the 16<sup>th</sup> century [Flören and Jansen, 2005]. Bavaria for example, one of the largest beer producers in the country, was established in 1680 [Flören and Jansen, 2007]. Even now 10% of all family firms in the Netherlands are being led by the third or later generation also indicating the focus most family businesses have on long-term sustainability and continuity rather than realization of short-term profits [Mandl, 2008; Flören, Uhlaner et al., 2010].

With more than half of the world's economy driven by family businesses, their significant contributions to economic performance and employment and their long lifespans, it can be stated this is one of the most influential and important sectors in the world.

### 2.2 WHAT IS A FAMILY BUSINESS: A DEFINITION

Numerous articles have been written about what constitutes as a family business and numerous definitions have been the result [e.g. Sharma, Chrisman et al., 1997; Westhead, 1997; Sharma, 2004]. Still, a common operational definition to be used in empirical research into family businesses worldwide is missing. The lack of such a clear cut definition is the most important issue in family business research and makes comparison between different studies and countries difficult [Handler, 1989a; Casson, Yeung et al., 2008; Jones and Zeitlin, 2008]. Moreover, it hinders researchers "to build on each other's work and develop a usable knowledge base" [Lansberg, 1988, p. 2].

A research conducted in 2008 showed that amongst the 33 European countries studied there was not one definition that was widely accepted and exclusively used for research into family businesses. In total 90 different definitions were identified, a number that already indicates that in some countries more than one research-based definition exists (in extreme cases more than 5 definitions were found in one country) [Mandl, 2008].

Although researchers have not yet reached consensus on this subject, there are some overlaps to be found between the definitions used in the literature. Definitions can include one or more of the following criteria: percentage of family ownership, involvement of family in management, strategic control, involvement of family in non-managerial positions, the intention for business to stay in the family, family business culture and trans-generational succession [Astrachan, Klein et al., 2002; Casson, Yeung et al., 2008; Ibrahim, Angelidis et al., 2008; Mandl, 2008]. Another criterion that is used in some studies within Europe is much more subjective and based on the perception of the respondent. Some authors claim that the classification of a firm as family or non-family should be left up to the judgement of the general manager. Support for using this criterion as definition for family business research is said to be growing [Westhead, 1997; Gallo, Tàpies et al., 2004; Ibrahim, Angelidis et al., 2008].

The most commonly used criteria however, are percentage of family ownership, involvement of family in management and strategic control [e.g. Westhead, 1997; Astrachan, Klein et al., 2002; Ibrahim, Angelidis et al., 2008; Mandl, 2008]. In the 90 definitions identified by Mandl [2008] almost all referred to the ownership position of the family as a criterion. The majority indicated the family to have a dominant position in ownership or in other words own at least 50% of all shares in the company. The second most used term is concerned with the control of one family on strategic decisions or general management of the company. 75% of all studied definitions included a criterion

based on these terms. The criteria used can be divided into two groups: 'soft' and 'hard' criteria. Astrachan, Klein et al. [2002, p. 2] state that a definition of a family business should be "unambiguous and transparent in such a way that it can be quantified". The 'soft' criteria are in this case much more difficult to use because of their subjective nature and large dependence on the perception of the respondents. Examples are family indirectly runs the company, major family influence on management or significant proportion of the firm's management. Hard criteria on the other hand, provide a much easier and more objective tool to clearly distinguish family businesses from non-family businesses. For example, more than 1 family member in management or majority of the management team stems from one family.

Interestingly, Hulshoff [2001] conducted a research among members of a Dutch SME panel and discovered that companies who think of themselves as family businesses do so primarily because family members work in the company (37%). The ownership criterion came in second place with only 22% while the control in management was for only 10% of the respondents the reason to consider their companies as a family firm.

One of the most widely accepted definitions for family businesses has been developed by the London Business School [Hulshoff, 2001; Uhlaner, Dekker et al., 2003]. This definition states that a business will qualify as a family business when one of the following three criteria is applicable [Abbas, Davies et al., 1989; Flören, 1998; Hulshoff, 2001; Uhlaner, Dekker et al., 2003]:

- 1) More than 50% of the shares or certificates are owned by a single family
- 2) A single family can exercise considerable influence
- 3) A significant proportion of the members of the board of directors are from one family.

Most of the early research conducted in the Netherlands used this definition and although it can provide benefits (e.g. easily quantifiable and large corporations with only small shares will also be included due to criterion 3), a broad definition can also cause a disproportional part of the businesses to be classified as family business as the study by Hulshoff [2001] shows [Klein, 2000; Uhlaner, Dekker et al., 2003]. In his study amongst SME's 83% of these companies is classified as family business using the definition of the London Business School [Hulshoff, 2001]. Nevertheless, a narrow definition can become too restrictive and leave out a large and important part of the family businesses [Lansberg, 1988].

Shanker and Astrachan [1996] propose a model in which definitions can be divided into three groups based upon their level of perceived family involvement in the company: broad, middle and narrow definitions (see Figure 1). In the broad definition the direct family involvement in the business is limited. The family has some degree of influence on strategic control and the intention to keep the business in the family exists. The second group (middle) elaborates on the broad definition and also includes the requirement for a founder or descendant to manage the company. Finally in the narrow definition they go a step further and include multiple generations to have run the family business, direct involvement of family in the management or ownership of the business and more than 1 member of the family having a significant management responsibility. Although several possibilities for a definition for family businesses are given, this model is not developed to indicate which definition is best. The 'Bull's Eye' is merely a tool which makes it possible to compare data even when these are based on different definitions. As long as the definitions in the studies fit in the same circle, outcomes of the researches can be compared [Klein, 2000].



Figure 1 - The Family Universe Bull's Eye [Shanker and Astrachan, 1996]

The model of Shanker and Astrachan [1996] does not provide a clear cut best definition to be used in family research. Flören [2005] however, argues a definition based on the middle circle of the Bullseye (see also Figure 1) to be the most appropriate for family business research. Flören [2005] indicates that the middle circle best describes the actual interaction between the interests of the business, the interests of the family and the interest of the owners. Based on this middle circle and the London Business School definition [Flören, 1998], Flören developed a new definition in his dissertation in 2002. The majority of research in the Netherlands is based on this definition.

According to Flören [2002], a business can be qualified as a family business when it complies with at least two of the following three criteria:

- 1) More than 50% of the company is owned by one family
- 2) One family has significant influence on decisions concerning company strategy
- 3) A majority or at least two members of the company management are from one family

### 2.3 OWNERSHIP, BUSINESS AND FAMILY SYSTEM

Like any other company, a family firm strives to grow and create income while still maintaining the continuity of the business. Although in this way the family firm seems similar to non-family firms, there is one significant difference: the involvement of family ties. The family firm can be divided into two systems: the family and the business [Gersick, Davis et al., 1997]. Families are connected by emotional bonds, internally oriented and consider loyalty and the care for family members as important values. The family system strives to limit change and keep balance within the family. A minimum of conflicts will be preferred and even denied or repressed in order to keep the balance in the family [Flören, 2002]. The business system on the other hand focuses on completing tasks and is externally oriented. This system aims to produce goods or services for the market in order to realise profits. In order to survive the business system uses change to effectively react to alterations in the environment [Flören and Jansen, 2005].

In a non-family business these systems are both present but function separately from one another, while in a family business they do not only overlap and interact but are also dependent on one another. As Table 1 shows, both systems have opposite goals which can cause specific tensions in

family businesses. However, when both systems are balanced, the interaction can also provide benefits giving these companies a unique competitive advantage over non-family businesses [Gersick, Davis et al., 1997; Uhlaner, Dekker et al., 2003; Flören and Jansen, 2005]. Therefore, balancing the family demands and business requirements is a difficult but important issue in family firms [Carlock and Ward, 2001].

· · · · ·			
Family system	Business system		
Connected from birth	Joining is your own choice		
For live	Temporary		
Based on emotions	Based on rationality		
Unconscious behaviour	Conscious behaviour		
Rewards on the basis of equality	Rewards on the basis of accomplishments		
Internally oriented	Externally oriented		
Conservative	Dynamic		

Table 1 - Differences between family and business system [Flören and Jansen, 2005]

Tagiuri and Davis [1996] argue that the two-system model is not sufficient to accurately portray all family businesses. These authors propose a further distinction between the ownership and management systems present in a company currently combined within the business system (see Figure 2). In family businesses it is possible for family member to be managers but not own shares or be owner of the company but not actively involved in the company [Gersick, Davis et al., 1997]. Especially in family businesses that have already gone through a succession the possibility to find shareholders of the company not working in the company itself is high [Flören and Jansen, 2005]. Gersick et al. [1997] support the argument for the three system-model. Through their own research they experienced that many of the most important dilemmas faced by family business are caused by tensions existing between ownership and management rather than between the family and the business as a whole.

The three-circle model represents a family business as three independent but overlapping systems: ownership system, business system and family system [Tagiuri and Davis, 1996; Gersick, Davis et al., 1997; Flören and Jansen, 2005].



Figure 2 - Three-circle model [Tagiuri and Davis, 1996]

Each person involved in the family business can be placed in one of the seven sectors formed by the overlapping circles (see Figure 2). When an individual has only one connection to the firm, he or she will be placed in one of the sectors on the outside of the figure: 1, 2 or 3. Examples are a family member with no ownership or active involvement in the company (1), an employee who owns no shares of the company and is not a family member (2) or an owner who is not family, nor working in the company (3). The more connections somebody has with the company, the further inward this individual will move. In sectors 4, 5 and 6 individuals will have two connections, for instance an employee who also owns shares but is not family (6). The most extreme case is the person who fits in sector 7 with three connections to the firm, for example the managing director who is also a family member. Although every individual can be placed in one of the sectors represented in Figure 2, they only have one location in this model and cannot exist in multiple [Gersick, Davis et al., 1997; Flören and Jansen, 2005].

The three-circle model has been frequently used in family business research and widely accepted by academics due to its theoretical elegance and immediate applicability [Gersick, Davis et al., 1997]. The model helps researchers better understand the complex interactions taking place in family businesses and show how conflicts and tensions may arise. For instance, a firm has to decide about the dividend policy. A person in sector 5 (family/owner/non-employee) might want to increase dividends as a reward for family ownership and suitable compensation for the investment. The opposite might apply for a person in sector 4 (family/non-owner/employee) who wants to suspend dividends in order for the company to invest in growth opportunities and secure the continuity of the company. This example clearly shows how the model can help in defining the different views individuals might have due to their position in the model and how this can cause tensions and conflicts within the family firm [Gersick, Davis et al., 1997].

### 2.4 THE UNIQUENESS OF THE FAMILY FIRM

### 2.4.1 THE STRENGTHS OF THE FAMILY BUSINESS

Several studies have considered the differences between a family business and a non-family business and argue that the variances provide significant benefits. One of the main issues researched is the difference in performance between family businesses and non-family businesses. Some authors argue that in general family firms outperform non-family firms. Anderson and Reeb [2003] for example analysed 403 companies mentioned in the Standard and Poors 500 firms in the period 1992 and 1999. Their analysis indicated a positive relationship between family ownership and firm performance which led to the conclusion that family firms perform better than non-family firms. Lee [2006] who conducted a comparable research among the S&P 500 firms and extended the period to run from 1992 to 2002, found a similar result and indicated that when all other things are held equal, family firms grow faster and are more profitable than their non-family counterparts. Family businesses are also more optimistic about the future and show better results than non-family businesses as a survey conducted by MassMutual amongst family businesses in the United States has shown [American Family Business Survey, 2007]. Additionally, several studies have revealed family firms to outperform non-family businesses on other levels as well [e.g. Aronoff and Ward, 1995; Anderson and Reeb, 2003].

This enhanced performance is attributed to specific competitive advantages developed due to the interaction between the family and business system [e.g. Aronoff and Ward, 1995; Gersick, Davis et al., 1997; Uhlaner, Dekker et al., 2003; Flören and Jansen, 2005]. The unique strengths a family business possesses are being discussed in this section.

*Commitment.* The ethics and behaviour patterns present in a family can also be found in the working environment of the family firm. The family spirit is of great influence on the attitudes, norms and values in the company and helps employees establish a sense of identification. The enthusiasm of the family about their business, especially found with the founder who can be extremely passionate about his 'creation', translates into enhanced commitment, loyalty and dedication amongst employees [Kets de Vries, 1993; Flören and Wijers, 1996; Uhlaner, Dekker et al., 2003; Flören and Jansen, 2005].

*Flexibility*. For a family member of a family firm there is more at stake than just a job. The family name is linked to the product being produced, faulty and defect products will therefore also influence the reputation of the family. To maintain a good performance and a good reputation, family members will be more flexible with dedicating extra time and money to the company which provides them with the ability to quickly adapt to changes in the environment [Kets de Vries, 1993; Flören and Jansen, 2005].

*Stability.* Family firms are characterized by stability in different areas: organizational structure, culture and performance. First of all, in the Netherlands in general, CEO's of family firms stay on longer than CEO's in non-family firms [Flören, 1998]. A founder for example stays on as managing director for an average of 24 years [Astrachan and Kolenko, 1994]. This long connection to the company allows for relationships to develop and stabilize over time diminishing the chance for conflicts and arguments to arise. Secondly, the culture inside the working environment of a family business is based on the ethics, norms and values present in a family. If the company is passed on to the next generation within the family, culture is very likely to change and remain stable [Flören and Jansen, 2005]. After all, the new management will also have been brought up with the same ethics, norms and values that make up the business culture. Finally, family firms provide stability to the market through their performance. Data collected in several studies has shown family businesses to perform better than non-family firms even when the market is experiencing an economic downturn. They are also less likely to lay-off employees in times of crisis making them a stable and trustworthy employer and business partner [e.g. Aronoff and Ward, 1995; Anderson and Reeb, 2003; Lee, 2006].

*Long-term orientation.* As mentioned earlier, reputation is important for family firms since not only the name of the company is at stake but also the family's name. It is therefore unattractive for family firms to go for short-term financial gains if this damages the company's standing in the market [Kets de Vries, 1993]. Moreover, family firms' owners will be less likely to extract money from the company if doing so means endangering the continuity of the company. They are more focused on continuity and have a long-term orientation. Non-family businesses often have to deal with external parties like investors and stockholders who are focused on short term results [Flören and Jansen, 2005]. The difference in orientation between management and owners is referred to as the agency theory. The agency theory concerns the conflict of interest that arises when one party (the agent) performs work delegated to it by another (the principal). In public organizations these agent-principal conflicts appear when shareholders and management have different goals concerning the company which can result in significant agency costs for the company [McConaughy, 2000]. In family firms

management and ownership are not as much separated as would be the case in public companies. The family relationships among owners/managers reduce agency costs and allow family firms to have a long term orientation rather than a focus on short term gains [Fama and Jensen, 1983].

*Quick Decision-making.* The family culture present in a family firm does not only provide employees with a sense of belonging but also lowers barriers to access senior management. In many family businesses the decision-making authority is centralized and limited to one or two top family members [Habbershon and Williams, 1999]. Bureaucracy is therefore often less present and enables decisions to be taken more quickly [Dreux, 1990; Kets de Vries, 1993; Flören and Jansen, 2005].

*Reliability.* The stability and commitment of employees are the basis for family firms to be considered as a reliable business partner. First of all, family firms are private companies and therefore do not carry the risks (like a takeover) that can influence the investments in publicly traded companies. Secondly, family businesses have a stable, strong and committed management and work force. Firms with committed employees have a lower rate in personnel turnover [Lockwood, 2007]. Customers can therefore more easily build up a relationship with an employee in a family firm which is preferred to being consulted by a different face each time [Flören and Jansen, 2005]. Thirdly, possible investors like the fact that the owner's capital is also invested in the company, whereas in a public company management often has little capital at risk. The connection between owner and management will result in a more careful approach and limit the risk for the investors. Finally, family firms work with a long-term orientation focused on continuity rather than short-term profits [Dreux, 1990]. All these characteristics make family businesses attractive as a business partner to customers, investors and suppliers.

*Knowledge*. Knowledge is becoming more important in today's economy and is recognized as one of the most important competitive advantages a company can have. Family businesses often have a unique way of working which is cherished and protected within the family. This unique tacit knowledge often found with the founder or general manager can provide family firms with a significant advantage over their competitors [Flören and Jansen, 2005]. Nevertheless, this strength relies heavily on one or two individuals in the company whereas the other previously discussed strengths are dependent on the company as a whole. The chances for losing this strength are therefore higher. After all, when the founder or entrepreneur leaves the company valuable knowledge will be lost. The topic of knowledge within the family firm will be discussed in more detail in chapter 4.

### 2.4.2 THE WEAKNESSES OF THE FAMILY BUSINESS

Although family firms are said to outperform non-family firms, this sector is also faced with specific difficulties. Only one-third of family businesses survive to the second generation, while 10% close their doors before the third generation takes over [Stavrou and Swiercz, 1998]. The combination and overlap of the family and business systems, which are based on fundamentally different objectives, makes family firms extremely susceptible for misunderstandings and conflicts [Sharma, 2004]. This is only one of the weaknesses that are being discussed in this section.

*Financing.* Due to their private nature, family firms have a limited array of possibilities for acquiring financial capital. While public companies have the access to a large group of shareholders, the private family firm is dependent on their own family finances. Moreover, family firms are reluctant to

acquire financial resources from external investors for fear of losing control over their own organization [Coleman and Carsky, 1999; Flören and Jansen, 2005]. Several authors confirm that the lack of willingness of family businesses to attract finances from external sources is a barrier for the growth of the organization [Gallo and Vilaseca, 1996; Uhlaner, Dekker et al., 2003].

*Emotional issues.* The family system is driven by emotions while the business system is based on rationality [Flören and Jansen, 2005]. These seemingly incompatible systems are melted together in a family business, providing unique strengths but also significant challenges [Flören and Karssing, 2000]. First of all, decisions in a family firm are not purely rational and can be partially based on emotional factors. Research conducted by Cromie, Stephenson and Monteith [1995] showed that some family firms consider family interests to be more important than business interests and this number even increases for second generation managers. Although emotional decision-making provides benefits (e.g. quick decision-making process), the lack of marketplace objectivity can also negatively influence the performance of the family firm (e.g. limit strategic aggressiveness) [Kets de Vries, 1993; Tagiuri and Davis, 1996; Flören, 2002; Mandl, 2008]. Secondly, family conflicts and business conflicts often get mixed up. Business conflicts can spill over into the family atmosphere and family conflicts can end up in the workplace. Rivalry between siblings for example is one of the most common conflicts in a family which should not be underestimated [Flören, 2002]. It is often seen in second generation firms where siblings control the firm together. The emotional ties and intimacy are more intense than with the first generation because siblings grow up together, share memories and form an opinion on one another. The chances for emotional conflicts to arise are therefore higher [Plantefève-Castryck, 2010]. Finally, the overlap existing between the family and business system can provide family members the opportunity to play the role that gives them the greatest power in conflict situations. The owner for example can retreat in his role of father and treat his son, who is also an employee of the company, as a child to maintain his position of power. The changing of roles can obscure the actual disagreement and delay the resolution of conflict. In non-family businesses members are much more unlikely to retreat in non-business roles and more likely to handle objectively [Tagiuri and Davis, 1996].

*Succession.* A transfer of management and/or ownership is a disruptive and difficult process in any business. In a family business however, an unsuccessful succession does not only mean bankruptcy of the firm but can also tear families apart due to conflicts surrounding this issue [Flören, 2002]. During a succession in a family firm not only managerial problems need to be addressed but emotional issues also arise complicating the process [Flören and Jansen, 2005]. The topic of succession in the family business will be discussed in more detail in the next chapter.

### 2.5 CONCLUSION

This chapter shows the importance of family businesses for the Dutch economy. More than half of the GNP and employment opportunities in the Netherlands are created by family firms. A similar result can be found in other countries around the world, nevertheless, the operational definitions used in family business research differ and comparisons between studies are therefore difficult. The definition most frequently used in the Netherlands will also be used in this study. According to this definition, a firm is classified as family business if it complies with two of the three following requirements: more than 50% of the company is owned by one family, one family has significant influence on decisions concerning company strategy and a majority or at least two members of the company management are from one family. Moreover, the chapter showed how the interaction between the family, business and ownership system increase the complexity in family firms. It provides significant strengths that enhance the performance the company but also initiates weaknesses endangering the continuity of the family firm.

One of the strengths identified in a family business is knowledge. Although it is an important key asset in any business, the interaction between family and business provide a unique form of tacit knowledge needed to develop a competitive advantage. Maintaining this knowledge is important and therefore the topic of this study. This chapter provides more insight in the unique features of the family business that influence the knowledge transfer and succession process which both will be discussed in following chapters.

### **3** SUCCESSION AND FAMILY BUSINESSES

Succession is one of the most critical stages in the lifetime of a company and involves a large amount of managerial problems [Flören and Jansen, 2005]. To better understand the challenges that family business are faced with in succession the topic has been the main focus for researchers since the 1980's. And although other disciplines started to take interest in the field in the 1990s, succession still dominated [Wortman, 1994]. A survey performed by Chrisman, Chua & Sharma [2003] of 190 articles between 1996-2003 shows not much has changed in the beginning of the new millennium. Even in the present succession is still one of the most researched topics in family business literature. Nevertheless, the study into the importance of knowledge transfer from predecessor to successor is still lacking. This chapter provides an overview of the theoretical findings in the academic literature concerning succession.

### 3.1 THE FOUR D'S

Every business will at one time be faced with the issue of succession, a difficult and mostly lengthy process that requires some preparation and planning time. Nevertheless, not in all cases this preparation time is available, for example the entrepreneur might suddenly turn ill or pass away leaving a company without a leader to continue the company. Four reasons have been identified that cause the succession process to be accelerated which is called the four D's [Flören and Karssing, 2000 p. 69]:

- Death
- Divorce
- Disability
- Departure

Succession in family businesses is five times more likely to be caused by one of the four D's than in non-family businesses [Flören and Jansen, 2005]. Research shows that 18% of the entrepreneurs in family businesses were forced to stop working. Interestingly enough, of the individuals who have transferred before their sixtieth birthday 41% was forced due to death or health issues. In a study performed by *National Life of Verment* and the *Small Business Council* in the United States in 1993 it was found that 77% of all family businesses that go bankrupt do so because of the unexpected passing of the founder [Flören and Karssing, 2000; Uhlaner, Dekker et al., 2003]. This shows the importance of a timely planning and communication concerning the succession to ensure continuity of the company.

### 3.2 TYPES OF SUCCESSION

Succession has two meanings; it can either refer to succession in leadership or to succession in ownership. Succession in leadership means that the current general manager (the predecessor) transfers his or her position and responsibilities in the company to a new general manager (the successor). When succession of ownership takes place, the current owner transfers his or her ownership in the form of for example shares or certificates to a new owner. Both types of succession can take place at the same time, but do not have to. There are numerous examples in which management is transferred but where the predecessor keeps ownership until his death. In other

cases the manager transfers the ownership of the company but still stays on as part of the management team. Nevertheless, research done by Meijaard and Diephuis [2004] showed that in two-third of the cases in the Netherlands ownership and management were transferred simultaneously.

The growth and survival chances of a business are to a large extent dependent on the way leadership and ownership are transferred. Figure 3 shows the different transfer methods for transferring leadership and ownership of a company. Each method for transfer will be discussed separately in this section.



Figure 3 - Transfer options [Eijk, Flören et al., 2004; Flören, Berent-Braun et al., 2011]

Each transfer method has its advantages and disadvantages and which type of succession is best for the company depends on several factors [Flören and Wijers, 1996]:

- The availability of a successor within and outside the family who is prepared and capable to continue operation of the company. If for example no successor is available, the founder might be forced to sell.
- The needs of the family, sometimes it is necessary to extract money from the company to arrange for the retirement funds of the founder (in which case the family might opt for sale or liquidation rather than transfer within the family).
- The fiscal consequences of the different transfer methods for the firm and its employees.
- The health and size of the company.
- The commercial and business environment at the time of the transfer.

### 3.2.1 TRANSFER TO FAMILY MEMBER

Many entrepreneurs dream of transferring their company to one or more of their children ensuring continuity of the company through the next generation. Prior to the actual transfer more than 90% of all entrepreneurs indicate they would like to keep the business in the family, however, in only 62% of the cases the company is actually still managed by a family member after transfer [Flören, Uhlaner et al., 2010]. The number of businesses that are transferred within the family has decreased over the years. Of transfers that took place between 1989 and 1998 60% was within the family, this number

dropped to 40% for companies transferred in the period of 1999 to 2004. In the majority of these transfers it is one of the children of the predecessor who takes his or her place. [Meijaard and Diephuis, 2004].

In only a small percentage of transfers (less than 10%) the ownership will stay with the family while the management is transferred to a non-family member [Flören and Jansen, 2005]. This type of transfer is mostly taking place when no suitable candidate for the management of the company can be found within the family. The ownership of the company is seen as a solid investment and therefore important for the family to maintain. In some cases the third party manager is only temporary. For example when the children of the managers are too young or do not have enough experience to take over the management of the company. The third party will lead the company until the next generation of the family is ready to step in. One example in which this type of succession took place is IKEA in which the founder Ingvar Kampstad did not believe any of his three sons was ready to step in his shoes yet. When Kampstad senior retired from his position as chairman, only non-family managers were part of the board. Now his sons have joined top management as well [Flören and Jansen, 2005].

### 3.2.2 TRANSFER TO THIRD PARTIES

Another succession method is when the company is being transferred to a third party. This happens in approximately one-third of the 75% of companies that transfer. These firms will be sold to another corporation and continues operation under a different name [Eijk, Flören et al., 2004].

The most common transfer methods are a management buy-out (MBO) and a management buy-in (MBI). In case of a management buy-out (MBO) the current management of the company will acquire either the whole company or a part of the company and continue operation under a different name. In most cases of an MBO the company is relatively small (less than 50 employees). This type of business transfer is also often seen in multinationals where a (non-profitable) part of the company is cut loose and continues to exist under the leadership of the existing managers of the department in question. The larger corporation can continue focusing on their core activities. In case the buying management team is currently not working inside the company and can therefore be labelled as third parties, the transfer is called a management buy-in (MBI). In many MBIs it is not only the management that is transferred but also a part of the ownership of the company. In 20% of transfer cases in SME's the method used was MBO while 25% was MBI [Meijaard, 2005].

Transfer to third parties usually happens when the owner's family wants to have financial resources that will be available through sale of the company. Another reason is the concerns a family business might have over the management of the company. It might be that the manager is not suitable for the company or that the manager leaves its position in which cases the owners might decide that selling to a third party is the best option. After all, it is more difficult for private businesses to quickly find a suitable replacement in management than it is for public companies. To prevent these issues from rising private companies often bind the manager to the company by offering them a part ownership. This way there will be a lot more at stake for the manager than just a job and it is less likely that he or she will leave easily.

In case the focus of the transfer is not on finding new management but on finding new investments, the transfer is called an investors buy-in (IBI). This can either take place by issuance of shares or by

debt financing. By investing in the company these parties will gain the power to influence decisions made by the company's management. Some investors even take place in the management team or join the board of directors to execute this influence.

The three before-mentioned transfer methods all involved transfer of only a part of the company, either management or ownership or both partially. When both management and ownership are completely transferred to the employees or third parties, the transfer is called an acquisition. The party taking over the company can be a single person, several persons but also another (family) firm.

### 3.2.3 MERGER

Another method of transfer is the merging of two companies which are often comparable in size. In a merger the new management is a balanced combination of the management of the two separate companies now merging. If the management is not balanced and one of the parties has more influence in the new combined management team, the joining of the companies cannot be labelled as a merger but more as a take-over (which was discussed previously).

### 3.2.4 LIQUIDATION

Only 75% of all companies in the Netherlands will be transferred and continues to operate, leaving 25% which will cease to exist [Flören and Jansen, 2005]. Although it is an emotional step, it is still a realistic option for any company to liquidate and can prevent difficulties that arise during a transfer. Finding a suitable replacement to manage the company for instance can be difficult and time-consuming. Choosing between candidates can also cause tensions within the family. In most cases a firm is forced to liquidate due to bankruptcy. In family businesses, 10% of all bankruptcies are caused by the failure of the family to arrange for the transfer of the company [Flören, 2003].

### 3.3 SUCCESSION AS A PROCESS

Succession seems to happen at one moment in time, but it is often better explored when viewed as a process being played out over time instead of a single event [e.g. Harvey and Evans, 1995]. Although every business transfer is unique, it will always follow a certain pattern [Kenyon-Rouvinez and Ward, 2005]. To describe this pattern academics have developed several models that divide the succession process into different phases. One of the first models developed to describe this process was done by Longenecker and Schoen in 1978. The model exists of seven stages: pre-business, introductory, introductory-functional, functional, advanced functional, early succession and mature succession. In the first phase of the model the successor is aware of some aspects of the family business but is not yet involved and working in the firm. During phase 2 and 3 the successor will get more educated about the company until at the end of phase 3 he will join the company. After phase 5 is completed the transfer of presidency starts and is finished in phase 7 when the successor has become the new leader of the firm (see Table 2).

### Table 2 - Succession phase model [Longenecker and Schoen, 1978]

Pre-business	Introductory	Introductory- Functional	Functional	Advanced Functional	Early Succession	Mature Succession
		Entry of Successor		Transfer of Presidency		
Successor may be aware of some facets of the organization or industry. Orientation of successor by family members, however, is unplanned or passive.	Successor may be exposed by family members to jargon, organizational members, and environmental parties prior to part-time employment in firm.	Successor works as part- time employee in organisation. Gradually, the work becomes more difficult and complex. Includes education and work as full- time employee in other organisations.	Successor enters organisation as full-time employee. Includes first and all sub- sequent non- managerial jobs.	Successor assumes managerial position. Includes all supervisory positions prior to becoming the president.	Successor assumes presidency. Includes time successor needs to become leader or more than 'de jure' head of organization.	Successor becomes 'de facto' leader of organization.

Geerlings [2005], however, describes a 4 phase model in which also the post-succession period is incorporated as a separate phase. The four phases are: orientation, preparation, transfer and aftercare (see Figure 4).



Figure 4 - Different phases in the transfer process [Geerlings, 2005]

The length of each phase differs per company and per family. Some might use a long orientation period while others prefer a longer transfer period. Nevertheless, many entrepreneurs strongly underestimate the length and complexity of the total transfer process. Generally, entrepreneurs believe that the total process takes approximately two years while in reality this easily takes seven years [Flören and Jansen, 2005].

For each phase different and specific issues can be identified that need to dealt with in the transfer process. The main issue that needs to be addressed in the orientation phase is the continuity of the company. The owner needs to determine what he thinks the future of the company will be and which transfer method would be preferred (see also section 3.1). Because these questions will confront the owner with his own mortality, this phase is often postponed even though it is essential for the future success of the business transfer. No definite choices have to be made in this phase. In the second phase (preparation) the plan will become more detailed and concrete. Important decisions need to be made concerning the technical, organisational and financial aspects of the transfer. The actual transfer takes place in the third phase which is appropriately called transfer phase. The entrepreneur will retire from his position as general manager to hand over the reign to his successor. Here the fiscal, legal, financial and organizational structures will be adapted to fit the new situation with the successor in control of the company. The transfer phase is a difficult time for both the successor and predecessor. Finally, after the successor has become the new general manager of the company, the aftercare phase starts. The succession does not stop ones the transfer is finished, attention should

still be given to the company, the successor and the predecessor. Not every predecessor will easily adjust to this new lifestyle not revolving around the business. In some cases however, where predecessor and successor have a harmonious relationship, the predecessor is still active as advisor or supervisor. Also the performance and developments of the company and the successor need to be monitored and when necessary adjusted to ensure the goal of the transfer is met: continuity.

The categorization of Harvey and Evans [1995] shows a similar result with a three phases model:

- 1) *Pre-succession,* phase in which the potential successor have not entered the business yet
- 2) Succession, phase in which the successor moves through the formal hierarchy of the business
- 3) *Post-succession,* phase in which conflict or damage in relationships and ambiguity that result from the previous phase are assessed and managed

The pre-succession phase is similar to the first four phases in the model of Longenecker and Schoen and the first phase of the Geerlings model. In this phase potential candidates can be identified and prepared for their successful entry into the family business. This already starts when the family members are young, even children are already familiarised with the challenges and fun of entrepreneurship at home. They will already learn much about the family business through simple socialization in the family and its business by for example summer jobs. Not only the family has to be prepared for succession but also the business itself [Kenyon-Rouvinez and Ward, 2005]. The phase ends when the potential successor starts working for the company full-time.

The succession phase focuses on the career path of the successor in the family business. It entails the progress of the successor from non-managerial jobs to managerial positions and the development of the informal network of influence he obtains along the way. Nevertheless, this phase also involves the preparation for the predecessor to step down from his position as president. For this succession planning is needed in which a structure is laid down for the transition in management and ownership.

The last phase is the post-succession phase which starts when the predecessor retires. It is important for the predecessor to be emotionally and financially prepared for retirement. For the successor it is important to be accepted as the new leader in the family business by stakeholder, employees but also investors, bankers, suppliers and distributors. These and other issues in previous phases might cause conflicts that damage relationships and endanger the success of the business transfer. Harvey and Evans [1995, p. 12] indicate that assuming that "after a successful succession 'it is really the end of problems' is not realistic and may doom the succession and its management to failure in the long run." Conflict-management is therefore an important part of the succession process, as well as post-succession monitoring of the company and family by both the predecessor and successor.

### 3.4 SUCCESSFUL SUCCESSION

### 3.4.1 DEFINITION

When is a business transfer successful? A difficult question to which there does not seem to be one clear cut answer. It seems logical to conclude that completing the transfer would mean a successful succession. But can a succession be called successful when the successor is unhappy with his position after he 'made it' through the process of transferring? A son could feel pressured to take over the

place of his father as manager of the company and end up in a position he never wanted [Gersick, Davis et al., 1997]. Can a succession be called a failure when the acquired liquidity has opened up new opportunities for the next generation? The company could for example have been in the decline phase of the business cycle and not be profitable anymore [Kaye, 1996]. These examples show that a completed transfer does not necessarily mean a successful transfer.

The most commonly used method to define whether a succession has been successful is to asses two different factors: the "quality" and the "effectiveness" of the transfer. The first factor involves the quality of the transfer which is measured by the satisfaction of the stakeholders with the execution of the succession process. This involves of the perspective of founders, successors, family members, managers, owners as well as other agents involved in the business environment. It is an indication of the impact issues like conflict, distrust, rivalry, resentment and stress have had on the process. Since this is the opinion of an individual, the measurement is highly subjective. Therefore, as a second factor the impact of the transfer on the performance of the firm is used as an objective indication for the effectiveness of the succession. This can be measured by for example organizational or financial performance indicators [Morris, Williams et al., 1997; Sharma, Chrisman et al., 2001; Breton-Miller, Miller et al., 2004].

### 3.4.2 DETERMINANTS

A successful transfer of ownership and management depends on many factors. Morris, Williams et al. [1997] propose a model with three sets of determinants of a successful business transfer: the nature of relationships among family members, the preparation level of the heirs and the types of planning and control activities engaged in by the management of the family business. During an exploratory research in which two sets of data were used (data from structured personal interviews amongst 20 second or third generation managers of family business and data obtained in an earlier research from 40 groups of first to fourth generation family business owners over a 5 year period), the authors discovered that in 60% of the cases problems in the relationships between family members caused breakdowns in the succession process. Heirs not being sufficiently prepared was the cause of failure in 25% of the cases while issues surrounding planning and control activities occupied only 10% of the cases [Morris, Williams et al., 1997].

Based on an extensive literature research, Sharma, Chrisman et al. [2001] developed a model existing of five factors. First of all the propensity of the predecessor to transfer management has an important influence on the success of the transfer. Many emotional barriers exist that can prevent or delay a predecessor from even thinking about stepping down from his position and plan his succession. Some of these emotional obstacles are [Flören, Berent-Braun et al., 2011]: fear of death, reluctance to relinquish power and control over the company, inability to choose between children as successor, fear of retirement, feeling indispensable, loss of identity or simply having a bias against planning.

A research conducted in 1997 by Flören amongst managers of Dutch family businesses who had recently undergone a transfer in management showed that for 62% one or more of the before mentioned emotional barriers have played an important role in postponing the succession planning process. Bias towards planning and reluctance to relinquish power and control were mentioned by

40% of the entrepreneurs as the reason for delay. Still 30% indicated that a fear of death also played a part [Flören, 1997].

The second factor in the model is the propensity of the successor to take over the business. Lack of interest from the successor is mentioned as one of the most common reasons for a difficult transfer. Morris, Williams et al. [1997] found empirical evidence that the willingness of the successor significantly influences the quality of the transfer in a family business. A successor who is not committed and reluctant to do the job will only delay and complicate the transfer [Sharma, Chrisman et al., 2001; De Massis, Chua et al., 2008]. Moreover, the worst nightmare of any successor is to ruin the family business which their parents or grandparents have worked so hard to build. This fear can also decrease the willingness of a successor to accept the new position as manager in the company [Flören and Jansen, 2005].

Succession planning is the third factor in the model developed by Sharma, Chrisman et al. [2001]. Research conducted by the European Committee showed that 10% of all bankruptcies in the European Union are caused by insufficient or total lack of succession planning [Flören and Karssing, 2000]. Therefore, succession plans are believed to increase the chances for a smooth and successful transfer [e.g. Morris, Williams et al., 1997; American Family Business Survey, 2007; Plantefève-Castryck, 2010].

The agreement to continue the business is the fourth factor in the model. In a succession process many stakeholders are involved of which each can be placed somewhere in the three-circle model for the family business (also see section 2.3). These stakeholders can have different goals and therefore a different view on what type of succession should be chosen resulting in conflicts that might jeopardize a successful succession [Sharma, Chrisman et al., 2001].

The last factor involves acceptance of the individual roles stakeholders play in the succession process. To avoid conflict it should be clear to all involved individuals what their role in the succession process and the post-transfer period will be. Furthermore, these roles need to be accepted to prevent any opportunistic behaviour to surface which can linger on after succession is finished [Harvey and Evans, 1995]. A clear understanding and acceptance of the roles of the stakeholders will increase the chances for a satisfactory succession.

### 3.4.3 POST-TRANSFER PERFORMANCE

Whether a succession has been effectively performed can be measured by the post-transfer performance (see also section 3.4.2). There are a multitude of factors that determine the performance of the business in the post-transfer period. Based on the literature surrounding this topic, Meijaard [2005] has developed a business transfer model to be used for family as well as non-family businesses in which the factors are divided into the three different phases of Harvey and Evans [1995] discussed earlier in section 3.3: pre-transfer, transfer and post-transfer phase (see Figure 5).

In the pre-transfer phase Firm characteristics (I), Predecessor characteristics (II), Planning (III) and the Reason for transfer (IV) all have influence on the post-transfer performance. This effect is also found in the transfer phase where the influential factors are the Successor characteristics (V) and Transfer properties (VI). Post-transfer performance is defined by both subjective and objective measures namely, Organisational changes (VII), Attitudinal changes (VIII) and Performance changes (IX).



Figure 5 - Business transfer model [Meijaard, Uhlaner et al., 2005]

Note: Relationships and dependencies between categories I through IV are left out for transparency. Also the links between categories V and VI and the links between categories VII, VIII and IX are not shown.

This model has been constructed based on a literature research, only some variables have been empirically tested to determine whether they influence post-transfer performance. These variables all fall into four of the boxes: Firm characteristics (I), Planning (III), Successor characteristics (V) and Transfer properties (VI).

First of all, from box I (Firm characteristics) the variable firm size shows to have a negative relation to post-transfer performance: the smaller the company, the better the post-transfer performance is [Meijaard, Uhlaner et al., 2005; Berent, Uhlaner et al., 2009]. Other firm characteristics that have been tested include age of the company, sector the company operates in and family ownership. Although some sector differences were found, the correlations were too small to have a significant effect on post-transfer performance. For age and family ownership no significant relationship was found [Meijaard, Uhlaner et al., 2005].

For box III (Planning), Meijaard, Uhlaner et al. [2005] have shown a positive effect of planning for transfer on post-transfer performance (especially on sales growth). This effect is particularly

noticeable when transferring to non-family members. Although other research has suggested the opposite effect: the use of formal planning is only useful in family-to-family transfers [Berent, Uhlaner et al., 2009]. Furthermore, the use of outside advisors is negatively related to post-transfer performance [Meijaard, 2005].

Furthermore, for successor characteristics (box V) the effects of gender, total work experience, work experience outside the firm, relation to predecessor, insider or outsider, education and business training have been tested. Work experience outside the firm has a negative relationship with post-transfer performance [Berent, Uhlaner et al., 2009]. Although the total work experience and education seem to be positively correlated, the relationships are weak and only seem to hold for one or two of the variables predicting post-transfer performance [Meijaard, 2005]. Business training on the other hand, has a negative effect on post-transfer profitability while gender, insider or outsider and relation to predecessor show no significant relationship at all [Meijaard, 2005; Meijaard, Uhlaner et al., 2005; Berent, Uhlaner et al., 2009]. However, Berent, Uhlaner et al. [2009] did find a positive relation between predecessor and strategic intent making them to suggest that it might be "much more important for the family business to plan for change (and, probably to introduce changes) than to strive for knowledge retention" [Berent, Uhlaner et al., 2009, p. 11].

Finally, in box VI (Transfer), family to family transfers are in general slightly less profitable than nonfamily transfers indicating the effect the type of transfer has on post-transfer performance [Berent, Uhlaner et al., 2009]. Furthermore, differences have been found in post-transfer performance between different transfer methods (see also section 3.2). For family transfer and buy-outs profitability is increased while sales and innovativeness remain stagnant. In buy-ins and non-family transfers sales growth and innovativeness both increase while profitability is stagnant [Meijaard, 2005; Teeffelen, 2010].

### 3.5 CONCLUSION

Transfer of leadership can take place in several different ways. Although transfer to a family member was the preferred method in the 80s and 90s of last century, the number of transfers to family members is decreasing. Nevertheless, succession is a difficult process. It is often accelerated by sudden events like death, divorce, disability or departure of the predecessor. But for a succession to be successful several issues need to be dealt with. For example, a predecessor needs to be willing to transfer management and a successor needs to be motivated to take over. To determine whether a succession has been effective, the post-transfer performance can be measured. Meijaard [2005] developed a model in which the factors that influence the post-transfer performance are divided over three phases: pre-succession, succession and post-succession.

This model has been only partially tested and indicates that work experience and education have a significant positive influence on post-transfer performance. This gives an indication of what will be found during the study while trying to answer sub-questions 6 and 7. The model also provides the variables to be used for measuring the post-transfer performance in this study (namely financial performance and organisational change).

### 4 KNOWLEDGE TRANSFER

### 4.1 WHAT IS KNOWLEDGE?

### 4.1.1 ROLE OF KNOWLEDGE IN TODAY'S ECONOMY

'Knowledge is power' is a quote often attributed to Sir Francis Bacon [Bartlett, 2000]. This English philosopher already knew in the 16th century that human progress was best served by acquiring knowledge. However, until the 20th century acquiring and developing knowledge was an activity limited to academics. In the 20th century the complexity of products and production methods increased and the knowledge input of workers was recognized as crucial for the continued success of a company. The importance of knowledge became apparent, literature on the subject increased and governments started initiatives to stimulate knowledge development in society. In the Netherlands for example, the government decided in 2003 to establish an innovation platform that was focused on stimulating innovation in order for the country to belong to the top five of knowledge countries in the world [2011]. Furthermore, emphasises was put on education and developing upcoming students into knowledge workers as well as increasing the inflow of knowledge workers from abroad [ANP, 2008].

For a company to be able to manufacture products and survive in the market certain factors are a necessity. In the 17<sup>th</sup> century the theory of factors of production was first developed and included only two factors: land and labour. In 1803 Jean-Baptiste Say published a book in which he indicated a third factor to be included in the theory, namely capital. The three factor theory is still the most commonly used and accepted theory in the academic world. However, over the years the theory has been developed even further and some even suggest six factors of production. These theories include factors like organization, entrepreneurship, human capital and knowledge. Some researchers even indicate all factors of production to be substituted by only one single factor: knowledge [Dean and Kretschmer, 2007].

John Kenneth Galbraith identified the increasingly important role knowledge played in the economy. He developed a theory that stated authority to be connected to factors of production, whoever had this factor would have the authority. In the past land would be the most important factor and landlords would have the authority. This changed when economies became more capitalistic and capital was the influential factor transferring authority to capitalists. In the course of the 20<sup>th</sup> century another shift took place from industries focused on capitalism to knowledge-intensive industries. The position of capital, like land did before, changed from being scarce to an easily available asset. Now people became the critical production factor and due to the fast and continuing developments in the industry and advancements in science and technology, specialized knowledge has become the key factor for success. The individuals possessing this knowledge and skills currently have the authority changing the structure of modern organizations [Geus, 1997; Xu, Chaudhry et al., 2009].

Galbraith believed that knowledge was the most difficult factor to acquire or substitute [Xu, Chaudhry et al., 2009]. This same view is found in the knowledge-based theory of the firm where knowledge is seen as "the most fundamental asset of the firm that other resources depend on" [Chirico and Laurier, 2008; p. 434]. This theory is based on the resource-based theory of the firm which focuses on combining the resources available in a firm to gain sustained competitive
advantage. A resource can be identified as a sustained competitive advantage when it complies with four key characteristics, it is: valuable, rare, inimitable and non-substitutable [Barney, 1991]. Knowledge can improve the performance of a company by exploiting opportunities and neutralizing threats making it a valuable resource. Knowledge is a factor that is developed over time in the minds of individuals which makes it unique and therefore rare. Moreover, knowledge that is in the minds of the workers is difficult to explain and thus difficult to imitate. Finally, knowledge is non-substitutable; there is no other resource available that can fully substitute the knowledge base of an individual. Knowledge can therefore be identified as a resource which can provide sustained competitive advantage and ensure continuity of the firm [Cabrera-Suárez, De Saá-Pérez et al., 2001].

# 4.1.2 DEFINITION

What is knowledge? Centuries long this question has intrigued individuals and academics all over the world but still no consensus on one common definition is reached. In 369 BC the great philosopher Plato already identified three possible definitions for knowledge: knowledge is perception, knowledge is true judgement and knowledge is true judgement with an account. Even though these definitions are given, not even Plato himself provides a clear answer on which definition is the best [Chappell, 2009].

The Merriam-Webster dictionary [2011] indicates knowledge to be "the fact or condition of knowing something with familiarity gained through experience or association" or "acquaintance with or understanding of a science, art, or technique". Davenport and Prusak [1998] define knowledge as:

"a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms."

In the definition of Weggeman [1997 as seen in Verburg, 2010], knowledge is the product of information, experience, skills and attitudes. Gardner [1995, as seen in Verburg, 2010] identifies knowledge as "knowing which information is needed (knowing what), how information must be processed (know how), why information is needed (know why), where information can be found to achieve a specific result (know where), and when which information is needed (know when)".

Most definitions include a mixture of various and multiple elements which shows that knowledge is not simple.

Although no consensus is reached on the definition of knowledge, it is commonly recognized that there are significant differences between data, information and knowledge. A type of hierarchical relationship exists between these three concepts that starts with data and builds up to knowledge [Daniels, 2009]. Data exists of symbols, numbers, statements or pictures that have no meaning [Verburg, 2010]. They are facts that are presented in an objective way, for example '30 degrees', '20 years', '4 children' or 'Saturday'. Adding meaning to this data converts it to information. Davenport and Prusak [1998] describe it as a message in the form of a document or any other type of audible or visible communication that can be send from one individual and received by another. An example of information would be 'Saturday our company will be closed'. Now the data of Saturday has meaning

and others will be able to receive this information and understand what the relevance and purpose of this data is. Knowledge is seen as a higher level of understanding than information. While information already has meaning, knowledge also has context and is created by integrating information with experience, intuition and judgment. The individual (or organization) makes sense of the information and creates an understanding so that they can act in a principled and informed manner [Callahan, 2006; Fetanat and Naghian, 2010]. Nonaka and Takeuchi [Nonaka and Takeuchi, 1995] indicate that knowledge is not just a function of a particular perspective but also that it is closer to taking action. With knowledge something can be achieved while information is still only data with meaning. For example, from experience an individual might know that the company is closed on a Saturday (knowledge) and will visit another day (action).

# 4.1.3 TYPES OF KNOWLEDGE

Many different types of knowledge can be identified but the most widely accepted division has been developed by Polanyi [1966]. This philosopher made a distinction between knowing and knowledge. Knowing applies to skills, an individual can "know how to do things without knowing or being able to articulate to others why what we do works" [Grant, 2007, p. 175]. One simple example given by Polanyi is riding a bicycle, although many people can do it only few can explain how the process works. By other researchers this type of knowledge is often referred to as tacit knowledge [e.g. Nonaka and Takeuchi, 1995]. They distinguish tacit knowledge from explicit knowledge by determining the easiness of transfer. Whereas it is difficult to articulate tacit knowledge, explicit knowledge is easily expressed, captured and stored in for example databases, books and manuals. Polanyi however argues that such a black and white separation between explicit and tacit knowledge cannot be made. In his eyes all knowledge has a tacit component and he therefore argues that tacit knowledge is not untransferrable but has rather a limited capability for transfer. The tacit component exists of the personal experiences and learning that have contributed to the development of the skill, ability or knowledge base [Grant, 2007].

This correspondents to the way Nonaka and Takeuchi [1995] describe tacit knowledge. They believe it is personal knowledge embedded in individual experience and involves intangible aspects such as personal beliefs, perspectives and values. It is often unconsciously learned and intuitively used. Tacit knowledge is found in the mind of an individual and can be divided into two dimensions: technical and cognitive. The first dimension involves the skills a person possesses, for example riding a bike. Cognitive knowledge is about beliefs and mental models that shape the way an individual sees the world, for example that stealing is bad.

Grant [1996] identifies knowing how with tacit knowledge and knowing about facts and theories as explicit knowledge. Explicit knowledge is revealed through communication, it can be easily told to someone else. Tacit knowledge on the other hand is revealed through its application. It is difficult to tell someone how to ride a bike but much easier to show them. Tacit knowledge is therefore best transferred by applying the knowledge and best acquired through practice.

## 4.2 KNOWLEDGE MANAGEMENT

Because of the sustained competitive advantage knowledge as a resource can offer a company, it is of vital importance to acquire and develop but also to retain knowledge. Knowledge is after all partly found in the mind of the people; if one of the employees leave, valuable knowledge will be lost. The process of developing, saving, sharing, learning, applying and evaluating knowledge is called knowledge management. The development of a solid knowledge management system is more and more important to stay competitive and maintain and strengthen the market position [Jashapara, 2004].

Knowledge management is a relative new and multidisciplinary field of research with most papers and books published since the 1990s [Grant, 2007; Jakubik, 2007]. Jashapara [2004]describes knowledge management as "the effective learning processes associated with exploration, exploitation and sharing of knowledge (tacit and explicit) that use appropriate technology and cultural environments to enhance an organizations intellectual capital and performance" [Jashapara, 2004, p. 12].

Knowledge management is often depicted as a circle. This means that it is a never ending process; after the knowledge is discovered, captured and shared the process starts all over again. Similar to what was already seen for the definitions of a family business and knowledge, there is no consensus with respect to the terms used in the knowledge management cycle. Nevertheless, there is some overlap found between the terms proposed by different authors. Jashapara [2004] for example depicts five main processes: discovering, generating, evaluating, sharing and leveraging knowledge.



Figure 6 - Knowledge management cycle [Jashapara, 2004]

Mishra [2009] proposes a cycle consisting of three processes, namely (1) knowledge capture and/or creation involving identification of knowledge and possible development of new knowledge and knowhow, (2) knowledge sharing and dissemination and (3) knowledge acquisition and application where the knowledge is understood and can be used.

Tripathy, Patra et al. [2007] have developed a very similar cycle which also involves three different processes:

- Knowledge generation comprises identification of which knowledge is required in the organisation, bringing this knowledge into the organisation, capturing the knowledge by documentation or training and synthesising knowledge by analysing and discussing with experts to enhance and complete the knowledge.
- 2) Knowledge storage involves codification and storage of knowledge in databases or documentation for easy reference
- Knowledge utilisation encompasses knowledge sharing through interaction with others and the use of databases and knowledge application which means using the knowledge acquired for solving problems, completing tasks, making decisions and learning [Tripathy, Patra et al., 2007].

Although there are many different knowledge management cycles and numerous processes to be identified, the primary concerns of knowledge management are knowledge creation and sharing [Jashapara, 2004; Tripathy, Patra et al., 2007]. Sharing knowledge ensures existing knowledge is retained within the company even after the source of the knowledge has left the organisation. This process helps in obtaining and maintaining a sustained competitive advantage through the resource of knowledge.

# 4.3 KNOWLEDGE SHARING

Knowledge sharing is one of the most important processes in the knowledge management cycle. Sharing knowledge boosts the overall organisational performance and stimulates innovation [Cabrera-Suárez, De Saá-Pérez et al., 2001; Zack, McKeen et al., 2009]. Even though knowledge sharing is identified as important, it is an unnatural behaviour and therefore difficult to stimulate. Knowledge is valuable and consequently provides an individual with a certain amount of power and position compared to others. Therefore the natural tendency is to accumulate and store knowledge rather than sharing this powerful asset with others [Davenport, 1997]. This is applicable to sharing internally inside the organisation but even more when sharing knowledge with external sources like competitors. However, knowledge sharing can lead to knowledge creation and the development of competitive advantages which is why organisations should strive to encourage and motivate this process [Davenport, 1997].

Every time an employee leaves valuable knowledge gets lost. Sharing knowledge can help in retaining this knowledge. Especially tacit knowledge which is difficult to store in physical media and resides in the mind of the individual is best retained by sharing with others. How knowledge is shared is represented by the SECI-model which will be described in the next subsection. Following the SECI-model insight will be given on the informal and formal way knowledge can be transferred. Finally, a description is given of the differences between internal and external knowledge sharing.

# 4.3.1 SECI MODEL

There are many ways available to transfer knowledge; nevertheless, how effective they are depends on the type of knowledge that is being transferred. The SECI model was developed by Nonaka and Takeuchi [1995] and describes four different ways to create and transfer knowledge based on whether the knowledge is explicit or tacit. These different methods are called knowledge conversion processes and reflect the various ways of learning (see Figure 7):

- 1) Socialization. The sharing of tacit knowledge such as skills and insights between individuals is called socialization. The knowledge is transferred through direct integration and imitation. For example by conducting joint activities such as working together. This way a continuing process can be started in which an individual learns the values, norms, behaviour and skills appropriate for his position in the organization. Physical proximity or face-to-face contact is necessary for this socialization process to be effective. A well-known form of tacit to tacit transfer is apprenticeship where the new-comer is learning from the long-time employee.
- 2) Externalization. Transferring tacit knowledge to explicit knowledge is referred to as externalization. It is sharing your individual and personal knowledge with others, the group, and making it 'external'. Articulating tacit knowledge, in other words make it explicit, involves expressing ideas and insights into words, concepts, figurative language (e.g. metaphors or analogies) and visual representations. This process also encompasses translating tacit knowledge of customers, suppliers and outside experts into explicit forms of knowledge to be stored in for example a database available to all inside the organization. Dialogue between peers is essential.
- 3) Combination. Combination is a process in which explicit knowledge is converted into a more complex set of explicit knowledge. It involves the combining of pieces of knowledge (for example development of a new method or new model based on other already available knowledge) and exists of three key processes:
  - *a.* capturing and collection new explicit knowledge from inside or outside the organization and combining these;
  - *b.* disseminating this knowledge throughout the organization through presentations and meetings; and
  - *c.* editing or processing the new material for easier use within the organization (e.g. documents or databases).
- 4) Internalization. The last conversion process involves transforming explicit knowledge into tacit knowledge. It is embedding explicit knowledge with personal insights and experiences transforming it into tacit knowledge. Training programmes, simulations, experiments and learning-by-doing are methods that can be used to internalize knowledge [Nonaka and Konno, 1998; Kidd, 2001; Andriessen, 2006].



Figure 7 - SECI model [Nonaka and Konno, 1998]

## 4.3.2 INFORMAL VS. FORMAL KNOWLEDGE PROCESSES

The previous section described various ways on how to transfer and share explicit and tacit knowledge inside the organisation. Another way to classify the methods for knowledge transfer is informal and formal methods. Every organisation has both informal and structural or formal knowledge processes working alongside one another. When knowledge is shared and transferred in a planned, organised and structured way, structural or formal knowledge processes are at work. The sharing of knowledge is intentional whereas with informal knowledge sharing this process is unintentional [Werquin, 2010]. Informal knowledge processes are characterised by knowledge shared spontaneously and on a voluntary basis [Hoe, 2006]. Examples of formal knowledge sharing takes place during conversations at the coffee machine, during lunch, during office parties or ad-hoc meetings. The Internalization and Socialization processes [Hoe, 2006].

## 4.3.3 INTERNAL VS. EXTERNAL KNOWLEDGE PROCESSES

Another distinction made in the knowledge management literature concerning knowledge sharing is the sources the knowledge is obtained from. The difference is in internal and external sources. External knowledge is obtained from the environment and integrated into the firm whereas internal knowledge is developed and transferred within the company. External knowledge is not unique; other companies (e.g. competitors) also possess and incorporate this knowledge into their organisation. Nevertheless, this knowledge is demanded and valued by customers. It is necessary for the existence of the company [Andreu and Sieber, 2011]. An example of such knowledge would be how to produce a car; all car manufacturers know how to but without this knowledge production would not be possible. External knowledge is acquired from the environment and integrated into the company. Possible ways to acquire external knowledge are through cooperation with customers, suppliers and other firms as well as forming partnerships either locally, nationally or internationally [Svetina and Prodan, 2008]. Although this type of knowledge may be a competitive necessity, internal knowledge is needed to really differentiate the company from others in the marketplace. Internal knowledge is specific for the organization and developed within a context. It is therefore more valuable inside the organisation and harder to imitate. Firms obtain this type of knowledge through internal sources like in-house research and development activities as well as internal education, training programs and knowledge systems [Svetina and Prodan, 2008; Andreu and Sieber, 2011].

The fact that the internal knowledge is obtained from another source than external knowledge influences the easiness to obtain such knowledge. Individuals inside the organisation are physically nearby and more likely to communicate about internal information and processes. This type of knowledge is therefore cheap and easy accessible. Competitors however, might be a lot more careful with sharing knowledge to prevent any confidential information to end up in the hands of their opponents or legal issues might block the transfer of knowledge. These barriers make it more difficult to obtain external knowledge. The effort it takes to obtain external knowledge and the seemingly scarcity of it enhances its value in the eyes of managers [Menon and Pfeffer, 2003].

Although managers seem to value external knowledge higher than internal knowledge, relying on either one of the knowledge types does not lead to a sustained competitive advantage [Andreu and Sieber, 2011]. This claim is supported by the results of a research conducted by Svetina and Prodan [2008] where external and internal knowledge were identified to both have a positive effect on the performance of a company.

# 4.3.4 OBSTACLES

Although knowledge sharing is important, the process is not always smooth and efficient. Szulanski [1996] identified four groups of obstacles that hinder the effective transfer of knowledge inside a firm:

- 1) Characteristics of the knowledge transferred with causal ambiguity of the knowledge and the fact it is unproven mentioned as the most important issues.
- 2) Characteristics of the source which involves lack of motivation to share and the issue where the source (and thus his knowledge) is perceived as unreliable.
- 3) Characteristics of the recipient, specifically the lack of motivation to accept knowledge from others, lack of absorptive capacity (i.e. lack of necessary knowledge base for understanding the knowledge presented) and lack of retentive capacity (i.e. the capability of retaining the knowledge presented).
- 4) Characteristics of the context which encompasses the organizational structure surrounding the knowledge transfer and the ease of communication (e.g. tacit versus explicit knowledge or a strained relationship versus a good relationship).

The study of Szulanski showed that knowledge-related factors such as the recipient's lack of absorptive capacity, causal ambiguity and a difficult relationship between the source and the recipient were the major barriers for internal knowledge transfer [Szulanski, 1996].

## 4.4 KNOWLEDGE AND THE FAMILY BUSINESS

In chapter 2 the important position family businesses have in the global and national economies was discussed. This has raised the interest among academic scholars resulting in a significant increase in the research into family businesses. Knowledge has become the main asset for any company and used to develop a competitive advantage in order to survive in today's economic environment. Over the past two decades a large body of academic literature has been published focused on the topic of knowledge and knowledge management. Interestingly, a considerably small amount of attention is given to knowledge management in family businesses [e.g. Chirico and Laurier, 2008; Trevinyo-Rodríguez and Bontis, 2010]. There are however distinct differences between family and non-family businesses that influence the transfer of knowledge.

Family businesses distinguish themselves from other companies by the presence of a unique atmosphere. Employees feel like they are part of something and are meaningfully contributing towards a common goal. Loyalty is enhanced and involvement amongst the workforce increased [Flören and Jansen, 2005]. This sense of belonging indirectly shapes ties between these employees. The same development is found within families. Members are connected by the same ancestor and feel a personal belonging and interpersonal attachment to the group, i.e. the family. Family ties however, have evolved over a longer period of time and keep on evolving as social exchanges between family members are regularly repeated. Together with the emotional aspects, family ties are believed to be stronger and have a larger impact on the knowledge transfer process [Trevinyo-Rodríguez and Bontis, 2010].

This impact can be either positive or negative. While strong ties are believed to be necessary for transferring tacit and complex knowledge, the emotional aspects that provide the strength in these ties can also cause conflicts and hinder the knowledge sharing process. Trevinyo-Rodríguez and Bontis [2010] found that the kind of emotional relationship and the strength of the ties between family members impact the knowledge transfer process between generations within a family business. The better and the stronger the relationship is, the more efficient the knowledge transfer will take place [Cabrera-Suárez, De Saá-Pérez et al., 2001].

Moreover, the high degree of commitment and dedication the employees and family members of a family business display is one of the capabilities that may provide these firms with a competitive advantage. It is a unique feature for the family business developed through the interaction between the family and business system and therefore a specific asset that non-family businesses do not possess. This and other rare, valuable, inimitable and non-substitutable features specific for the family firm can provide the firm with a tool for long-term survival [Cabrera-Suárez, De Saá-Pérez et al., 2001] (see also section 2.4). Habbershon and Williams [1999, p. 11] describe this "unique bundle of resources a particular firm has because of the systems interactions between the family, its individual members, and the business" as the 'familiness' of a firm. For this 'familiness' to become a sustained competitive advantage specific knowledge is needed to properly manage and develop the assets. This knowledge is often embedded in the mind of the entrepreneur or founder of the family business and therefore has distinctive tacit elements. Transferring this knowledge to the next generation is vital for maintaining and further developing the competitive advantage 'familiness' can offer [Cabrera-Suárez, De Saá-Pérez et al., 2001].

Finally, in non-family firms the transfer of knowledge starts the moment a successor is found who is willing to step in the predecessor's shoes. As long as the succession process takes, the knowledge can be transferred. However, in family businesses the informal get-togethers with the family also provide an opportunity to transfer knowledge. It is not uncommon for families to discuss business when celebrating a birthday, wedding or during a family reunion. The successor is already subjected to organisation-specific knowledge from infancy and has therefore a head start to a successor in a non-family business where such opportunities for informal knowledge transfer were not available [Kets de Vries, 1993].

## 4.5 CONCLUSION

The chapter showed the importance of knowledge in today's economy and how it can contribute to the development of a competitive advantage. It answered sub-questions 1 and 2 by indicating the difference between explicit and tacit knowledge and the different ways knowledge can be transferred to others, for example SECI-model, through informal and formal or internal and external processes. Moreover, there are some differences to be found in knowledge transfer between family and non-family businesses. First of all, the influence of the emotional ties existing within the family can either positively or negatively influence the knowledge transfer process. However it is suggested that the better and stronger the relationship, the more efficient the knowledge transfer will take place. Also, family businesses have a unique bundle of resources called 'familiness' that are formed by the special interaction between the family and business system. The knowledge to strategically use these assets is embedded in the mind of the founder of a family firm. Non-family firms lack such unique resources and the knowledge to implement them. Finally, the family businesses are more likely to transfer knowledge through informal processes like family get-togethers and birthdays than non-family firms. All these differences indicate that the influence of knowledge transfer on posttransfer performance can differ significantly in family firms when compared to non-family firms. Therefore, the research will incorporate different types of knowledge transfer that include both informal and formal knowledge transfer practices.

# 5 TECHNOLOGY FIRMS

In this research a specific distinction is made between technical companies and non-technical companies. This chapter will discuss the term technology in more detail and provide insight in the sectors that can be classified as technology. The chapter is concluded with an explanation of the importance of knowledge in the technology sector.

## 5.1 DEFINITION OF TECHNOLOGY

The word "technology" originally stems from the Greek language and is a combination of two words: "techne" and "logia". Techne means an art or skill while logia refers to science or study. In the literal meaning of the word, "technology" is a science or study of an art or skill [Ramanathan, 1994]. Until the beginning of the 20<sup>th</sup> century this meaning of technology, in which the term only referred to the study concerned with the practical arts, was adopted into the English language. In the 1930s Thorstein Veblen introduced the meaning of the German word "Technik" into the English language which significantly changed the definition of technology. From then on the word "technology" referred not to the study of the industrial arts but rather to the industrial arts themselves [Schatzberg, 2006].

Still a large variety of definitions for technology can be found in dictionaries as well as scholarly and academic literature. Ramanathan [1994] studied the different definitions and concluded they can be classified into four perspectives: "Technology as transformer", "Technology as a tool", "Technology as knowledge" and "Technology as embodiment forms". Each perspective indicates the manner in which a technology is viewed. For example, in the Technology as transformer perspective technology is viewed as the means to produce or complete an activity. The technology as a tool perspective however, looks upon technology as a machine, equipment or apparatus while technology as knowledge concerns the intangible elements of technology, like knowledge and know-how. Technology of embodiment forms is a combination of the three before mentioned perspectives and sets out to describe the technology 'black box' in a more complete sense.

The large variety of definitions for technology is in part due to the fact that technology has different meanings. The most commonly used meanings can be defined in three groups: 1) technology is the branch of knowledge dealing with or study of mechanical arts and applied sciences, 2) technology is application of such knowledge for practical purposes or 3) technology is the product of such application [e.g. Merriam-Webster Dictionary, 2011; Oxford English Dictionary, 2011].

A definition that fits the "Technology as a tool" perspective and is more applicable for this research is provided by the Business Dictionary [2011]. "Technology" is:

• "The purposeful application of information in the design, production, and utilization of goods and services, and in the organization of human activities."

# 5.2 CLASSIFICATION OF SYSTEMS

Companies are often classified into sectors according to their type of economic activity for which many different code systems are available worldwide. One of the more internationally accepted code systems used internationally has been developed by the United Nations: International Standard

Industrial Classification of All Economic Activities (ISIC). The majority of countries around the world use ISIC as their national classification or has developed a national system derived from ISIC. The system was first introduced in 1948 and has undergone four revisions of which the last was completed in the year 2006. These revisions are necessary due to developments in industries changing the economic structure of the countries. Especially in the last twenty years the fast emergence of new technologies has significantly changed the economic landscape forcing the United Nations to review their classification codes 3 times within 15 years. The economic activities are divided into a four-level structure of mutually exclusive categories. The first level divides all activities into broad groups called sections and are distinguished by a letter, for example "Agriculture, Forestry and Fishing" (section A) and "Manufacturing" (section C). The subsequent levels consist of numeric codes and each higher level is a more detailed division of the level before. The categories in level two are called divisions and consist of two digits, level three are groups with three digits (the two digits of the division plus one extra digit) and level four are called classes indicated with four digits (the three digits of the class plus one extra digit) [United Nations, 2008].

A classification specifically designed for the European markets is the Nomenclature Statistique des Activités Économiques dans la Communauté Européenne, commonly known as NACE. The NACE was developed by the European Union and first introduced in 1970. The classification has undergone two revisions of which the last (NACE rev. 2) was completed in 2008 and is mandatory for all EU members. However, EU members are allowed to develop a national code system as long as it is based on the NACE and approved by the European Committee. NACE consists of four levels of which the first two are identical to the first two levels in ISIC. The last two (more detailed) levels three and four are adapted to the European market situation and therefore different from ISIC. Due to the overlapping levels the NACE shares with the ISIC, the revision dates of both systems coincide [Eurostat, 2008].

In the Netherlands the Standaard Bedrijfsindeling (SBI) is used to make a hierarchical division into economic activity. The SBI is used by official institutions like the Centraal Bureau voor de Statistiek (CBS, national institution for statistical research) and the Chamber of Commerce in the Netherlands. This code system consists of five levels of which the first four levels, with only a few exceptions, are identical to the four levels of the NACE. Consequently, the first two levels of the SBI are identical to the first two levels of the ISIC. The last fifth level has been specially designed for the Dutch economy to make an even more detailed differentiation. Following the revisions of the ISIC and NACE in 2006 and 2008, the SBI was revised and the SBI 2008 is currently used for statistical research in the Netherlands [Centraal Bureau voor de Statistiek, 2011a].

# 5.3 TECHNOLOGY VS. NON-TECHNOLOGY SECTORS

In the twenty-first century developments in science and technology exponentially increased and a new word was to develop to make a clear distinction between the older existing technologies and the recently and newly developed technologies. The term high-technology was formed which is defined as a technology that is cutting edge, or in other words technology that is advanced. Now technologies are often divided into several different groups ranging from low technology to high technology.

For example, the Business Dictionary Online [2011] defines three groups of technologies:

- "High entirely or almost entirely automated and intelligent technology that manipulates ever finer matter and ever powerful forces."
- "Intermediate semi-automated partially intelligent technology that manipulates refined matter and medium level forces."
- "Low labour-intensive technology that manipulates only coarse or gross matter and weaker forces.

A similar classification can be made amongst industrial corporations that use high, intermediate or low technology. The Organisation for Economic Co-operation and Development (OECD) developed a classification of manufacturing industries based upon technology. The industries are categorized according to their R&D intensity which is defined as the direct R&D expenditures as a percentage of their production [OECD, 2007]. The scale is based upon the information gathered from 12 OECD countries (e.g. USA, Canada, Japan, United Kingdom) during the period 1991 and 1999. Due to the fact the scale is based upon actual numbers, in the future when more current information is used, the division might change and industries may shift between categories.

The manufacturing industries are divided over four different categories: high-technology, mediumhigh-technology, medium-low-technology and low-technology industries. Companies belong to either one of the categories according to their ISIC.

Table 3 shows the classification of the manufacturing industry sectors into the four categories.

High-technology industries	Medium-high- technology industries	Medium-low-technology industries	Low-technology industries	
Aircraft and spacecraft	Electrical machinery and apparatus, not elsewhere classified (n.e.c.)	Building and repairing of ships and boats	Manufacturing, n.e.c.	
Pharmaceuticals	Motor vehicles, trailersRubber and plasticsand semi-trailersproducts		Wood, pulp, paper, paper products, printing and publishing	
Office, accounting and	Chemicals excluding	Coke, refined petroleum	Food products,	
computing machinery	pharmaceuticals	products and nuclear fuel	beverages and tobacco	
Radio, TV and	Railroad equipment and	Other non-metallic	Textiles, textile products,	
communications	transport equipment,	mineral products	leather and footwear	
equipment	n.e.c.			
Medical, precision and	Machinery and	Basic metals and		
optical instruments equipment, n.e.c.		fabricated metal		
		products		

 Table 3 - Classification of manufacturing industries based on technology [OECD, 2007]

This classification is done by using the ISIC code system and was translated to the SBI code system for use in this study. However, this only provides a more detailed classification of the manufacturing industries into high, medium and low technology sectors. To classify all remaining sectors into technology sectors or non-technology sectors on of the definitions of technology provided by the Merriam-Webster Dictionary will be used:

• "A manner of accomplishing a task especially using technical processes, methods, or knowledge."

This means that not only sectors which include manufacturing but also companies that design buildings (use of technical knowledge) or repair watches (use of technical tools, methods, process and knowledge). With this definition and the OECD classification in mind, Table 4 indicates which sections, divisions, groups or classes can be identified as technological and included in the group "technological sector".

Section	Part of section included in technology sector (codes				
	are according to SBI 2008)				
Classification according to OECD					
C – Industry (manufacturing)	Complete section				
D – Production and distribution of and trade in	Complete section				
electricity, gas, steam and refrigerated air					
E – Extraction and distribution of water; waste- and	Only division 38 (Waste collection and treatment)				
wastewater-control and sanitation					
J – Information and Communication	Only division 58 (Publishers) and group 59 (Production				
	and distribution of movies, TV-programs and sound				
	recordings)				
S – Other services	Only division 95 (Repair of computers or consumer				
	products)				
Classification according	to Technology definition				
B – Quarrying	Complete section except division 09 (Services for				
B – Quarrying	Complete section except division 09 (Services for quarrying)				
B – Quarrying E – Extraction and distribution of water; waste- and	Complete section except division 09 (Services for quarrying) Only division 36 (Water supply companies) and 37				
<ul> <li>B – Quarrying</li> <li>E – Extraction and distribution of water; waste- and wastewater-control and sanitation</li> </ul>	Complete section except division 09 (Services for quarrying) Only division 36 (Water supply companies) and 37 (Wastewater collection and treatment)				
<ul> <li>B – Quarrying</li> <li>E – Extraction and distribution of water; waste- and wastewater-control and sanitation</li> <li>F – Construction</li> </ul>	Complete section except division 09 (Services for quarrying) Only division 36 (Water supply companies) and 37 (Wastewater collection and treatment) Complete section				
<ul> <li>B – Quarrying</li> <li>E – Extraction and distribution of water; waste- and wastewater-control and sanitation</li> <li>F – Construction</li> <li>G – Wholesale and retail trade; repair of motor</li> </ul>	Complete section except division 09 (Services for quarrying)Only division 36 (Water supply companies) and 37 (Wastewater collection and treatment)Complete sectionOnly division 45 (Trade in and repair of cars, motor				
<ul> <li>B – Quarrying</li> <li>E – Extraction and distribution of water; waste- and wastewater-control and sanitation</li> <li>F – Construction</li> <li>G – Wholesale and retail trade; repair of motor vehicles</li> </ul>	Complete section except division 09 (Services for quarrying) Only division 36 (Water supply companies) and 37 (Wastewater collection and treatment) Complete section Only division 45 (Trade in and repair of cars, motor bikes and trailers)				
<ul> <li>B – Quarrying</li> <li>E – Extraction and distribution of water; waste- and wastewater-control and sanitation</li> <li>F – Construction</li> <li>G – Wholesale and retail trade; repair of motor vehicles</li> <li>J – Information and Communication</li> </ul>	Complete section except division 09 (Services for quarrying) Only division 36 (Water supply companies) and 37 (Wastewater collection and treatment) Complete section Only division 45 (Trade in and repair of cars, motor bikes and trailers) Only division 61 (Telecommunication)				
<ul> <li>B – Quarrying</li> <li>E – Extraction and distribution of water; waste- and wastewater-control and sanitation</li> <li>F – Construction</li> <li>G – Wholesale and retail trade; repair of motor vehicles</li> <li>J – Information and Communication</li> <li>M – Consultancy, research and other special business</li> </ul>	Complete section except division 09 (Services for quarrying) Only division 36 (Water supply companies) and 37 (Wastewater collection and treatment) Complete section Only division 45 (Trade in and repair of cars, motor bikes and trailers) Only division 61 (Telecommunication) Only division 71 (Architects, engineers and technical				
<ul> <li>B – Quarrying</li> <li>E – Extraction and distribution of water; waste- and wastewater-control and sanitation</li> <li>F – Construction</li> <li>G – Wholesale and retail trade; repair of motor vehicles</li> <li>J – Information and Communication</li> <li>M – Consultancy, research and other special business services</li> </ul>	Complete section except division 09 (Services for quarrying) Only division 36 (Water supply companies) and 37 (Wastewater collection and treatment) Complete section Only division 45 (Trade in and repair of cars, motor bikes and trailers) Only division 61 (Telecommunication) Only division 71 (Architects, engineers and technical design and consultancy; testing and control), 72				
<ul> <li>B – Quarrying</li> <li>E – Extraction and distribution of water; waste- and wastewater-control and sanitation</li> <li>F – Construction</li> <li>G – Wholesale and retail trade; repair of motor vehicles</li> <li>J – Information and Communication</li> <li>M – Consultancy, research and other special business services</li> </ul>	Complete section except division 09 (Services for quarrying) Only division 36 (Water supply companies) and 37 (Wastewater collection and treatment) Complete section Only division 45 (Trade in and repair of cars, motor bikes and trailers) Only division 61 (Telecommunication) Only division 71 (Architects, engineers and technical design and consultancy; testing and control), 72 (Research and Development) and 74 (Industrial,				

Table 4 - Classification into technological sector and non-technological sector

All remaining sections, divisions, groups and classes will be part of the group "non-technological sector".

#### 5.4 STATISTICS

In 2010 the largest sector in the Netherlands is made up by the service sector; approximately 41% of all companies are involved in some form of service. The second largest sector is wholesale and retail trade with about 21% of all companies in the Netherlands followed by construction with 12%. For the province of Zeeland the two largest sectors are similar to the whole of the country with services forming the largest sector with 38% followed by wholesale and retail trade with 21%. The third place in Zeeland is occupied by agriculture with 17% of all companies while construction falls to a fourth place, still with 11% of all economic activity belonging to this sector [Centraal Bureau voor de Statistiek, 2011b]. This difference between national and provincial level is not surprising considering the rural image Zeeland has acquired over the years.

When the classification for technology and non-technology sectors is used as discussed in section 5.3, in 2010 about 22% of all companies can be classified as a technical company while the remaining 78% belongs to the non-technical companies. Considering the large amount of service and wholesale and retail companies, this skewed division leaning towards non-technical companies could have been expected. In the province of Zeeland a similar result is found with approximately 20% of all economic activity belonging to the technology sector while 80% belongs to the non-technology sector [Centraal Bureau voor de Statistiek, 2011b]. Considering these results, it can be concluded that the province of Zeeland is a good representation of the situation in the whole of Netherlands concerning the technological sector.

# 5.5 THE IMPORTANCE OF KNOWLEDGE IN A TECHNICAL ENVIRONMENT

Knowledge is becoming more and more important in today's economy and is seen as the key competitive advantage for any business [Nonaka and Takeuchi, 1995; Smith, 2001]. To maintain the competitive position is important that this knowledge is shared and retained within the company.

The fast developments and rapid advancements in technologies have had a significant impact on the industry. For operational personnel who work with these technologies on a daily basis, up-to-date technical knowledge is a must. However, managers are responsible for the decision-making process regarding the utilization, upgrading and investment in all technologies used in the company. To be able to make substantiated decisions, managers need technical knowledge as well. This specific technical knowledge and technological expertise is not just important as input but can also be used as a marketing tool. The technical knowledge and skills found in the minds of employees and managers within the firm becomes an important intangible asset and is "at the foundation of competitive advantage" [Ghingold and Johnson, 1997, p. 273]. Nevertheless, it is questionable whether a general manager of a multinational with thousands of employees still needs technical knowledge.

For an entrepreneur who just started his company, technical knowledge is a must. With mostly only one or two employees the management of the start-up is usually a hands-on job. As the company grows and the entrepreneur moves upward in the hierarchical organisational structure, the need for technical knowledge will fade as he moves farther away from production. Managerial capacities and knowledge on finances, marketing and management become more important for a general manager to have than pure technical knowledge [Keuning and Eppink, 2000]. Belussi [1999] also argues that in skill-based sectors where technical knowledge is key, the knowledge needed can mostly be found in the labour force (workers, technicians and middle management) and inventive entrepreneurs. This already indicates how technical knowledge moves from the inventive entrepreneur at start-up to the shop floor in larger organisations. Moreover, the technical knowledge of the entrepreneur is likely to be crucial for production. It will therefore be spread throughout the company to all employees ensuring production and growth of the company is possible. Thus, the number of sources from which a successor can learn the technical knowledge has increased and is not limited to one person anymore. In some cases though the key knowledge for production is kept secret and is only known by a few people in the company, mostly executives. This is often found in the food industries where companies have survived and prospered for many years by limiting the knowledge sharing concerning certain recipes, examples of large corporations using this strategy are Coca-Cola, Dr Pepper and Kentucky Fried Chicken [Radford, 2009].

Still, it has to be noted that in general family businesses are small corporations and it is therefore likely that the general manager of the organisation is still involved in the technical side of business. He will still be the main source of information and the technical knowledge will still be very much imbedded in his mind. It is therefore important for the next generation taking over the position of managing director to obtain this firm-specific technical and managerial knowledge from the predecessor in order for the succession to be successful.

# 5.6 CONCLUSION

Technology is a vital part of society and has been around for centuries. Different definitions are available, however, for this study the definition of technology being "a manner of accomplishing a task especially using technical processes, methods, or knowledge" [Merriam-Webster Dictionary, 2011] will be used to distinguish between technical and non-technical business sectors. Together with the OECD classification for high to low-tech industries a division was made in the SBI code system into technical and non-technical businesses. This division will be used to classify the sample into the two different sectors. The chapter also showed the importance of knowledge in a technical environment. Technical knowledge is in skill-based industries still the key competitive advantage, especially in the nowadays fast developing economies. Although technical knowledge seems less important for a general manager to have when the company grows, family businesses are often small and it is highly likely that technical knowledge is still very much imbedded in the mind of the managing director. Transferring this knowledge from predecessor to successor is vital for the continuity of the company and positively supports the research question of this study.

## 6 RESEARCH FRAMEWORK AND HYPOTHESES

#### 6.1 THEORETICAL MODEL

To research the relationship between knowledge transfer from predecessor to successor and the post-transfer performance a research model has been developed (see Figure 8).



Figure 8 - Research model

The resource-based view (RBV) theory of the firm indicates a bundle of valuable resources at the disposal of the firm can lead to a competitive advantage [Wernerfelt, 1984] which in turn can cause a company to perform at a higher level than others in the same industry or market [Christensen & Fahey, 1984, cited by Chaharbaghi and Lynch, 1999]. Building on the RBV, promoters of the knowledge-based theory of the firm even state knowledge to be the most important determinant of sustained competitive advantage and superior performance [Grant, 1996]. Basically, these theories indicate that knowledge management can influence the performance of the company. The founder in family businesses often has a long tenure of more than 20 years as head of the company [Astrachan and Kolenko, 1994]. During this time valuable tacit knowledge is accumulated which can be vital for the survival of the company. The transfer of knowledge from predecessor to successor can therefore influence post-transfer performance.

When knowledge is transferred between predecessor and successor two questions can be asked:

- 1) How much knowledge is transferred?
- 2) In what way is this knowledge transferred?

Both answers may have a significant influence on the post-transfer performance. The first question will be answered in the variable Extent of knowledge transfer which will indicate the amount of knowledge transferred. The variable Knowledge transfer practices indicates to what extent different practices are used to transfer knowledge from predecessor to successor and answers question two. The post-transfer performance is measured by two different variables: Financial performance and Organisational change. Financial performance is measured by indicators such as profit and turnover

and gives an insight in the financial health of a company. Organisational change indicates the changes implemented in the organisation such as strategic changes and innovation.

These relationships may be influenced by moderating variables, for example sector. Other moderator variables include firm size, duration of the succession process, total work experience and education of which some have already, through empirical studies, been indicated by Meijaard [2005] and Berent, Uhlaner et al. [2009] to influence post-transfer performance (see section 3.4.3).

# 6.2 HYPOTHESES

In recent years significant changes have taken place in the economies around the world. Companies have shifted from capital-driven to knowledge-driven organisations and emphasis is put on acquiring and developing human capital [Geus, 1997]. Knowledge has fast become the most important production factor and has therefore a substantial influence on the success of a company [Xu, Chaudhry et al., 2009]. Like any other factor of production, knowledge needs to be acquired, developed, shared, protected and retained. Consequently, the interest in knowledge management has increased significantly over the past two decades [Jakubik, 2007]. One of the main issues within the field of knowledge management is the transfer of knowledge. Transferring knowledge does not only set the basis for and stimulate innovation, it also ensures knowledge is kept in the company in the event of one of the employees leaving [Cabrera-Suárez, De Saá-Pérez et al., 2001]. This is also applicable for a transfer of management where the general manager of the company will leave its position and the company. Therefore, to ensure continuity of the company, the knowledge of the predecessor should be transferred to the successor.

Polanyi [1966] was the first to indicate the distinction between explicit and tacit knowledge. The philosopher described tacit knowledge as "knowing more than we can tell, or knowing how to do something without thinking about it" [Smith, 2001; p. 314]. It is knowledge that is created through experience and depends on the situation the individual is in at the time. Tacit knowledge is therefore highly subjective and because it resides in the individual's mind it is also extremely difficult to express and formalize. A good example is riding a bike; it is usually taught by doing (experience) and executed without any further thought. Explicit knowledge is exactly the opposite; it is an objective form of knowledge that can be codified and transferred to others. It resides in documents, computer files or any other element that contains information, for example the financial report, a design drawing or a calculation [Cabrera-Suárez, De Saá-Pérez et al., 2001; Jakubik, 2007]. The most significant difference between explicit and tacit knowledge is its transferability. This difference in transferred by practice whereas explicit knowledge is better transferred through communication [Grant, 1996]. Since the transfer of both types of knowledge is essential for the success of the company, different knowledge transfer practices should be used. With this in mind, the following hypothesis has been created:

Hypothesis 1a: Firms where a higher variety of knowledge transfer practices are used to transfer knowledge between predecessor and successor are more profitable in the post-transfer period than those who use a lower variety of knowledge transfer practices.

In the model developed by Meijaard, Uhlaner et al. [2005], the post-transfer performance is indicated by three boxes: Organisational changes, Attitudinal changes and Performance changes. The attitudinal change is a highly subjective measurement tool (e.g. satisfaction of employees) while performance changes include objective measures like changes in profit, employment and sales growth. Organisational change can take both an objective and a subjective form. An objective organisational change would be for example implementation of a new computer system while a subjective organisation change is based on the perspective of the employees on the change. An example of such a subjective change is the sense that the new computer system would mean job losses [Vakil, 2005]. Morris [1997] indicated that a transfer should be measured using both an objective and a subjective scale. These measures evaluate two different aspects of a management transfer, namely the "quality" and "effectiveness". The quality can be measured by a more subjective factor while the effectiveness requires a more objective insight. Therefore, to fully evaluate the effects on post-transfer performance the following hypothesis is formed:

Hypothesis 1b: Firms where a higher variety of knowledge transfer practices are used to transfer knowledge between predecessor and successor will implement more changes in the organisation in the post-transfer period than those who use a lower variety of knowledge transfer practices.

The more different practices for transferring knowledge are used, the more likely it is for the amount of knowledge transferred to increase as well. After all, if no practices are used the chances for knowledge to be transferred from predecessor and successor are small and vice versa. Thus, the relationship between knowledge transfer practices and the post-transfer performance (measured in financial performance and organisational change) could at least in part be explained by the extent of knowledge transferred. In other words, the more different practices are used, the more knowledge is transferred and the better the post-transfer performance will be. Following this line of reasoning, the following hypotheses have been formulated:

Hypothesis 2a: The relationship between using different knowledge transfer practices and the financial performance is mediated by the extent to which knowledge is transferred between predecessor and successor.

Hypothesis 2b: The relationship between using different knowledge transfer practices and the organisational change is mediated by the extent to which knowledge is transferred between predecessor and successor.

On average, family businesses in the Netherlands start preparing their succession 1 to 1.5 years before the actual transfer takes place [Flören, Uhlaner et al., 2010]. Although this seems like a short timeframe, it could have been sufficient for the applicable company. It is difficult to indicate an ideal timeframe that is applicable to every company due to different circumstance surrounding the successions. Some experts in management succession suggest that a period of 3 to 5 years would be more sufficient to ensure a smooth transition of management while others even suggest a timeframe of 5 to 15 years [Family Business Institute; Institute for Family Business, 2008]. Intuitively, a longer timeframe for succession would provide a longer time to prepare and execute the succession. It would also provide more opportunity to use different knowledge transfer practices and transfer more knowledge from predecessor to successor. This argumentation has led to the formation of the following hypothesis:

# *Hypothesis 3: Especially in those situations where the succession process was longer, the relationship between knowledge transfer practices and the extent of knowledge transfer will be positive.*

In the knowledge management literature a distinction is made between external and internal knowledge. The main difference can be found in the sources or networks that the knowledge is obtained from. External knowledge is obtained from the environment and integrated into the firm whereas internal knowledge is developed and transferred within the company. Internal knowledge is acquired through for example internal R&D activities and is a more organisation-specific knowledge that is placed in a context. External knowledge on the other hand can be obtained by cooperating with competitors or suppliers. Another source of new knowledge that can be identified as external is employee skills developed by education or prior work experience [Svetina and Prodan, 2008; Andreu and Sieber, 2011]. In both cases the knowledge is gained from external sources rather than developed internally in the company. Some authors argue that relying on either one of the knowledge types does not lead to a sustained competitive advantage [Andreu and Sieber, 2011]. Similarly, research has shown both external and internal knowledge to have a positive effect on the innovation and change performance of a company [Svetina and Prodan, 2008]. This together with the fact that work experience and education showed a positive relationship with financial performance [Meijaard, 2005], the following hypotheses are proposed:

*Hypothesis 4a: Especially in cases where the successor had obtained a longer work experience prior to the transfer, the relationship between knowledge transfer practices and the post-transfer financial performance will be positive.* 

*Hypothesis 4b: Especially in cases where the successor had obtained a longer work experience prior to the transfer, the relationship between knowledge transfer practices and the post-transfer organisational change will be positive.* 

Although growth through creativity is important in the young stages of a company, when the company grows and gets older the focus of management needs to change. In phase 2 of the growth cycle, growth through management has become the main topic. The further a company develops, the more they need management practices (delegation, coordination, cooperation etc.) in order to keep on growing [Keuning and Eppink, 2000]. Moreover, in skill-based sectors the tacit knowledge needed can mostly be found in the labour force (workers, technicians and middle management) and inventive entrepreneurs [Belussi, 1999]. It is therefore important for a general manager to acquire and develop the management qualities needed for the continued development of the company.

However, the resource-based view shows us that knowledge is an important factor in every business [Barney, 1991]. In technological company knowledge about the technical products, processes or production methods used can provide a competitive advantage. In any case, the technical knowledge forms the basis of the company, without it the company would not exist. Without knowledge on how to build a car, Ford for example could never have grown to become one of the major players in its sector. Although knowledge on management might become more important for general managers in technical companies, technical knowledge remains vital for the survival of technical family businesses. With this and the importance of external knowledge for the performance of the company in mind, the following hypotheses have been created:

Hypothesis 4c: Especially in cases where the successor had obtained both a technical and a management education, the relationship between knowledge transfer practices and the post-transfer financial performance will be positive.

*Hypothesis 4d: Especially in cases where the successor had obtained both a technical and management education, the relationship between knowledge transfer practices and the post-transfer organisational change will be positive.* 

# 7 METHODOLOGY

# 7.1 DATA COLLECTION

#### 7.1.1 SAMPLE

The data was randomly collected from the large population of all businesses with economic activity in the province of Zeeland with the exception of self-employed professionals. Although this last group will in most cases fulfil the requirements for a family business as set out by Flören [2002], the companies do not have to cope with all issues present in a family business. For example, emotional difficulties surrounding family involvement in the business is not present and therefore if these firms are included in the research, the results will provide a skewed image of all family businesses in Zeeland. The data was collected by means of a telephone interview with the managing director of the firm. The interview existed of in total 77 questions and the length of the interview was on average 14 minutes. In total 778 respondents were contacted by an external organisation ensuring the anonymity of the respondents.

This research will include only family businesses in which the management has been transferred within last 5 years, are in the transfer process at the moment of the survey, or plan to transfer the management within next 7 years. The companies in this research therefore have to fulfil the following two conditions:

- Be defined as a family business: A company is defined as a family business according to the definition of Flören [2002]. A company has to fulfil at least two out of the three following conditions:
  - a. More than 50% of the company is owned by one family
  - b. One family has significant influence on decisions concerning company strategy
  - c. A majority or at least two members of the company management are from one family
- Have had or will have a succession: The following stages of succession are applied in this study: a) transfer of management maximum 5 years ago, b) currently busy with transfer, and c) transfer in the future within 7 years.

To determine whether a company fulfilled above two conditions, a number of screening questions was constructed discussed in Appendix I: Screening questions. Companies that do not fulfil these conditions will not complete the entire interview and are not included in the data.

After the first screening for a family business, 588 out of the 778 contacted remain in the sample. This means approximately 81% of firms with economic activity in the province of Zeeland can be classified as a family business (see Figure 9). Flören, Uhlaner and Berent-Braun [2010] found in their survey (which was based on a definition of family businesses that was very similar to the definition used in this survey) that about 69% of all companies in the Netherlands are a family business. It can be concluded from these numbers that family businesses are well represented in the province of Zeeland with a higher percentage than was found nationwide.



Figure 9 – Respondents according to their compliance with family business definition (N=725)

Interestingly enough of all these family firms not all perceive themselves as a family business. When asked, about 22% of the managing directors do not think of their own companies as a family firm. Apparently, these managing directors use different criteria to judge whether a company is a family business or not than were used in this research. This shows that when different definitions for a family business are used, different samples can be defined which makes good comparison between results difficult.



Figure 10 - Family businesses according to their own perception (N=203)

After the second set of screening questions 204 respondents turned out to have had a transfer of management within the last 5 years (13%), are currently busy with the transfer (11%) or will transfer within 7 years (11%). Figure 11 shows graphically the division of the 588 family businesses left after the first succession questions over the three groups and the percentage that do not fulfil the screening questions for succession.

After the screening sections, 201 companies<sup>4</sup> out of the 778 contacted remained and completed the entire interview. These respondents are stratified according to the following criteria:

- Size: 81 of the total 201 respondents have 2 to 10 employees; the other 120 respondents have more than 10 employees.
- Sector: Within both size groups the sample is stratified further into proportional quotas according to sector (SBI classification).

<sup>&</sup>lt;sup>4</sup> After the screening questions still 3 respondents did not complete the entire interview due to different reasons. Therefore, only 201 of the total 204 (that were left after screening) completed the interview.



Figure 11 - Transfer of management (N=587)

To examine and compare the influence of knowledge transfer during succession on post-transfer performance of family firms, the sample of 201 companies (family businesses in three different stages of management transfer) is limited to the companies that have already been transferred. This ensures the results of the research are according to facts rather than expectations of what might happen in the future. To ensure credible results from the memories of our respondents, the transfers are limited to a maximum of 5 years in the past.

Out of the total 201 respondents, 74 have had a transfer of management in the past 5 years. Of these 74 respondents that remain, 15 can be classified to belong to the "technological sector" while the remaining 59 belong to the "non-technological sector". This classification is based upon the division made in section 5.3. Appendix III: Classification of sectors for the sample shows to which sectors, divisions, groups and classes of the SBI 2008 the respondents belong to and thus how the division into "technological sector" and "non-technological sector" is conducted.

# 7.1.2 SAMPLE CHARACTERISTICS

## Size

Figure 12 shows the percentage of companies distributed according to the number of employees. The majority of companies have between 1 to 20 employees (approximately 77%). The largest portion with almost half of all firms have between 1 to 10 employees (48.0%) while just more than a quarter of respondents (28.8%) have between 11 to 20 employees. These results are certainly not surprising since many studies before have shown that the majority of family businesses can be found in the small to medium-sized sector [e.g.Mandl, 2008].





Table 5 shows that on average a family business in Zeeland exists of 18 employees. This low number is contrasted by the maximum amount of employees found in one company which is 130. This indicates that the results are quite skewed to the left which can also be seen from Figure 12.

Table 5 - Descriptives for the number of employees (N=73)

	Minimum	Maximum	Average	SD
Number of employees	1	130	18.36	22.84

# Age of the firm

Figure 13 represents the age of the companies represented in the sample. The highest percentage of firms (18.1%) is between 21 to 30 years old. However, over half of all companies (52.8%) are older than 40 years indicating family firms to have a relative long lifespan. On average a family business is 48.86 years, the youngest firm is 5 years old and the oldest has existed for 130 years (see Table 6).



#### Figure 13 - Age of family firms (N=72)

Table 6 - Descriptives of age of the firm (N=72)

	Minimum	Maximum	Average	SD
Age of the company	5	131	48.86	31.36

#### Sector

Figure 14 shows the distribution of family firms per sector. More than forty per cent indicate some type of service to be the main activity of the firm (41.9%), which includes accommodation and food service activities (12.2%), Transportation and storage (10.8%), Financial and insurance activities (9.5%), Professional, scientific and technical activities (5.4%), Other service activities (2.7%) and Administrative and support service activities (1.4%). The second largest sector is the wholesale and retail with 37.8% of all respondents, followed by manufacturing (6.8%), construction (5.4%) and agriculture (4.1%). The last sector other contains less than 5% of all family businesses (4.1%) and consists of Real estate activities, Education and Arts, entertainment and recreation with each 1.4%.



Figure 14 - Family businesses per sector (N=74)

#### Generations

Figure 15 represents the generation currently in managing the family firm. Most of the family firms are managed by the second generation with a percentage of 43.24%. Interestingly enough 22.97% of the respondents still have the first generation responsible for daily management even though a transfer has already taken place. It is possible that the company experienced a transfer of management as well as a transfer of ownership from one family to another (e.g. when a company is bought). In this case a transfer of management took place but the first generation (of the new family) is still in charge. Almost 10% are from the fourth generation (9.46%) while a small amount of companies are even from the fifth and sixth generation (both 1.35%). Some companies also have no family member in their daily management (4.05%). According to the definition of family business used in this study it is not necessary to have a family member in daily management to be classified as a family business.



Figure 15 - Generation currently in management (N=74)

## Management

Figure 16 shows the number of managers present in the family firms. Most of the family firms have 2 managers (41.89%) which is followed by 1 manager with almost one-third (31.08%) and 3 managers with 21.62%. Not many family firms exist of 4 managers with a number slightly higher than 5% (5.41%).





Figure 17 illustrates the amount of managers that are family of the owners. In the majority of the companies all managers in the firm have a family relationship with the owners (76%). About a quarter of all companies only have part of their management team related to the owners, in 4% of all cases one-third of all managers, in 8% half of all managers and for 12% two-third of all managers are family of the owners.



Figure 17 - Number of managers that are family of the owners (N=50)

#### Transfer of management

Table 7 illustrates characteristics of the year the management of the family firm has last been transferred. On average a company has been transferred 2.3 years ago. As described earlier, the minimum for transfer is this year (0) up to a maximum of 5 years ago.

Table 7 -	<b>Descriptives</b>	for year	of last	transfer	(N=74)
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	Minimum	Maximum	Average	SD
Year of last transfer	0	5	2,31	1,65

## 7.1.3 RESPONDENT CHARACTERISTICS

#### Predecessor or successor

Figure 18 illustrates the role of the respondent in the last transfer process. As could have been expected most of the respondents are successors with a total percentage of 86.30%. Since all companies have recently undergone a transfer it is more likely for the general manager to be the successor instead of the predecessor. However, the figure also indicates that not in all cases the transfer of management from predecessor to successor has been complete. Some respondents state the management has only been partially transferred and both predecessor and successor are currently involved in the general management of the company. Almost a quarter of the successors (23.29%) still work together with their predecessor while 63.01% is running the company by themselves. The fact that the transfer was not complete also explains why still some of the respondents are predecessors although the interviewer at the start of the conversation asks for the general manager. A little over 13% is still predecessor (13.70%) of which 12.33% has already partially transferred to their successor. Interestingly, 1% of the predecessor states to have transferred management completely while still acting as general manager.





#### Relationship predecessor and successor

Figure 19 indicates whether a family relationship exists between the predecessor and successor. In about three quarters of the cases the predecessor and successor are related (75.34%), the remaining quarter does not have a family relationship (24.66%).



Figure 19 - Family relationship between predecessor and successor (N=73)

Figure 20 provides an insight in how well the predecessor and successor know each other. Most of the predecessor and successor know each other very well (83.56%) while still 4% indicates to know the other well. Still 8% only know the other party reasonably well while only 1% indicates to hardly know them. Almost 3% doesn't know their predecessor or successor at all (2.74%).



Figure 20 - How well do the successor and predecessor know each other? (N=73)

#### Age and gender respondent

Table 8 shows some of the main descriptives of the age of the respondent. On average a respondent is about 41 years old with a standard deviation of 12 years. The youngest participant in the sample was 23 while the oldest was 71 years old.



	Minimum	Maximum	Average	SD
Age respondent	23	71	41.32	11.96

Figure 21 represents the gender of the respondent. Almost 80% of all respondents in the sample are male (79.45%) while a smaller 20% is female (20.55%). Considering the fact that managerial positions are still predominantly occupied by men this result is not surprising.



Figure 21 - Gender of respondent (N=73)

#### Work experience successor

Table 9 illustrates the work experience of the successor before the transfer in management took place. In total a successor has in total approximately 15 years of work experience before taking over the management of the family business. About 5.5 years of work experience are obtained outside the family business while 9.9 years is obtained inside the firm. Interestingly, at least one of the successors had either no working experience outside the family business or inside the family business before becoming a general manager. However, all respondents had at least 1 year of work experience in total; this indicates a successor had at least worked in another position for one year before the transfer of management took place.

Table 9 - Work experience successor (N=73)

	Minimum	Maximum	Average	SD
Work experience outside family firm before transfer	0	32	5.46	7.06
Work experience inside family firm before transfer	0	33	9.91	7.40
Total work experience before transfer	1	40	15.38	8.77

# Education

Figure 22 shows the type of education the successor has completed. The majority of the respondents (with a percentage of 41.4%) indicated that the successor completed a management study only. A little more than 20% (20.5%) has completed only a technical study while almost 13.7% of successors were educated both in a technical and a management study. The remaining 24.7% have followed another type of study.



Figure 22 - Type of education successor (N=73)

## 7.2 DESCRIPTION OF VARIABLES

The measurement of concepts used in the study is based on the existing literature [e.g. Zahra, Neubaum et al., 2007; Flören, Uhlaner et al., 2010]. However, due to the fact that the literature and especially empirical research on the knowledge transfer in the context of family business in technology sectors is rather limited, personal insights were considered when developing the questionnaire. Furthermore, discussions with Dr. Lorraine M. Uhlaner, visiting Professor of Entrepreneurship at Nyenrode Business Universiteit specialized in knowledge management and business transfer in SME's, Prof. Dr. Roberto H. Flören, Professor of Family business specialized in family business and family business transfer, and Dr. Marta Berent-Braun, Assistant Professor at the Center for Entrepreneurship specialized in family business and entrepreneurship, have contributed to the development of the elements within the questionnaire and enhanced the validity of this research.

All questions concerning knowledge transfer and organisational performance are measured on a 5point Likert-scale, extended with the options of 'not applicable' and 'I don't know'. The questions on financial performance were either answered on a 5 point or a 7 point Likert-scale. All variables have been created consisting of one or multiple items included in the questionnaire. To create the scale for the variables in which multiple items are combined several statistical analyses have been performed to test whether the new variables are valid. First the strength and direction of the relationship between the items is tested by a correlation analysis. Secondly, a factor analysis was performed to detect structure in the relationship between variables and classify the correlated items into factors. Finally, the validity of the identified factors is checked by calculating the reliability among all items within one factor which is represented by the Cronbach's alpha coefficient ( $\alpha$ ).

## 7.2.1 INDEPENDENT VARIABLES<sup>5</sup>

#### Knowledge transfer practices

The independent variable Knowledge transfer practices indicates the amount of different transfer practices used. This is measured by counting the number of times one of the following items was mentioned to be used to transfer knowledge between predecessor and successor: informal conversation, visiting the customers and suppliers together, formal methods (e.g. documents, computer files) and managing the daily activities of the company together. The respondents were able to indicate for each item on a 5-point Likert scale how much this practice was used (1 = used a lot ... 5 = not used at all). The answers 1 to 2 were recoded to 1 indicating this practice was used while answers 3 to 5 was recoded to 0 indicating this practice was not used. The newly created variable knowledge transfer practices is the sum of the four items and therefore ranges from minimum 0 to a maximum of 4.

#### Extent of knowledge transfer

The Extent of knowledge transfer is measured by taking the average of the following items: transfer of knowledge of the market, transfer of knowledge of customers and suppliers, transfer of knowledge of internal organizational processes and transfer of technical knowledge of products and services offered by the company. This variable is constructed by factor analysis; Cronbach's alpha coefficient of the scale is  $\alpha = .921$ .

## 7.2.2 DEPENDENT VARIABLES

#### Organizational change

The dependent variable Organizational change is measured by the average of the following items: significant changes in type of products or services offered by the company, significant changes in technical aspects of the products or services offered by the company, significant changes in the customers and suppliers database and significant changes in overall strategic goals of the company. The Cronbach's alpha coefficient of the scale is  $\alpha = .798$ .

#### Financial performance

Financial performance is measured by the average of the following items: comparison between profitability before and after succession, comparison between turnover before and after succession and profitability in the last year. Because the items were not measured on the same scale (5- and 7- point Likert scales), optimal scaling (CATPCA) was used to create the new variable. Missing values on a variable were imputed with the most frequent category in that particular variable (active treatment of missing values by imputing mode). Cronbach's alpha coefficient of the scale is  $\alpha = .795$ .

<sup>&</sup>lt;sup>5</sup> To reduce the effects of multicollinearity in the regression analysis, all independent variables and original interaction variables have been centered by subtracting each answer with the mean of the concerned variable (except variables measured on a dichotomous scale and all interaction terms). Source: StatSoft Inc. (2011). Electronic Statistics Textbook. Tulsa, OK, StatSoft.

## 7.2.3 CONTROL VARIABLES

#### Sector

All companies are classified according to the SBI classification. This classification is used by the Centraal Bureau Statistiek and is based upon the NACE and ISIC classifications developed by respectively the European Union and United Nations. According to these codes the sectors are divided into technological sectors and non-technological sectors. For a detailed view on how the sectors are specified see Appendix III: Classification of sectors for the sample. This division in sectors is used to control the sample.

#### Firm size

The sample is also controlled for the size of the firm which is indicated by the total amount of employees an organisation has. Due to the excess kurtosis on the variable, the values have been transformed to logarithms to approach a more normal distribution [Adams].

# 7.2.4 INTERACTION VARIABLES

## Duration of the succession process

The impact of knowledge transfer practices on the extent that knowledge is transferred might depend on the duration of the succession process. The longer this process takes the more possibilities exist for knowledge transfer practices to be used which could have a positive effect on the extent of knowledge transferred. The respondents could indicate after how many years the succession process was completed (from the first thought about succession up to all management tasks were transferred). The data on duration of the succession process showed excess kurtosis and was therefore transformed. Because the excess kurtosis was moderate and zero was also an answer option, here the square root of the values was taken to approach a normal distribution [Adams].

## Total work experience

The work experience obtained by the successor prior to the transfer is used as an interaction variable as well. This is an indication of the knowledge that has been obtained from other sources than the predecessor which might interact with the extent of knowledge transfer. The respondents were asked to indicate the number of years they worked inside and outside the family business prior to succession. The summation of these two answers is used as the total work experience variable.

## Education

Another interaction variable included in the analysis is education due to its possible effects on the relationship between the extent of knowledge transfer and the post-transfer performance. The respondents could choose more than one of the following options: technical oriented education, management oriented education and other type of education. In the analysis a dummy variable was created which indicated whether the respondents had completed a combination of technical and management studies (= 1) or had studied either technical or management or a completely different direction (= 0). This variable also provides an indication of the knowledge which they have obtained externally and brought into the company. The interaction will take place with the extent of knowledge transfer.

# 7.3 DATA ANALYSIS

In order to test the hypotheses indicated in section 6.2, SPSS version 19 is used to perform three statistical methods which will be explained in this section.

The first statistical method that has been used in this study is the factor analysis. This method classifies different correlated single variables into categories in order to reduce the amount of variables to be used in further analysis. To ensure all original items in the new scale measure the same, reliability of the scales is checked. This is done by checking the Cronbach's alpha which is an indicator of the internal consistency or average correlation of the single items in a scale [Reynaldo and Santos, 1999].

Secondly, the Pearson correlation coefficient between variables is checked. The correlation is a measure of the linear relationship between two random variables [Montgomery and Runger, 1999]. This analysis will indicate the significance, strength and direction of the relationship between the variables used in this research. Although the coefficient indicates whether one variable will increase or decrease as another variable increases or decreases, it does not mean a causal relationship between the increase or decrease in both variables between which a correlation exists [McClave, Benson et al., 2008]. It does however give a good view of the existing relationships between the variables in the analysis which is helpful in the regression analysis conducted further on in the research.

To finish, a multiple regression analysis was performed to discover the causal relationships between variables. The analysis predicts the outcome of a single dependent variable based on the known values of several independent variables. The analysis is conducted in a hierarchical way in which three blocks of independent variables are used. First a block of control variables is entered: size of the firm (amount of employees) and the sector (technical or non-technical). The second block of variables includes the independent variables extent of knowledge transfer and knowledge transfer practices. The third block includes the interaction variables: total work experience (total number of years of work experience (in and outside the family business) before transfer), education (technical and management study) and duration of the succession process (number of years). The number of independent variables used in the models is limited to a maximum of 10. This means that with a sample size of 74 the research meets the criterion of 5 observations per independent variable which is needed to ensure generalizability of the results [Hair, Black et al., 2005].

The model predicting these dependent variables can be expressed in the following equations:

$$\begin{split} \mathrm{EKT} &= \ \beta_0 \ + \ \beta_1 \mathrm{CV} + \ \beta_2 \ \mathrm{KTP} + \ \beta_3 \ \mathrm{IV} + \ \beta_4 \ \mathrm{IT} \ + \ \epsilon_1 \\ & \mathrm{FP} = \ \beta_0 \ + \ \beta_1 \mathrm{CV} + \ \beta_2 \ \mathrm{EKT} + \ \beta_3 \ \mathrm{IV} + \ \beta_4 \ \mathrm{IT} \ + \ \epsilon_2 \\ & \mathrm{OC} = \ \beta_0 \ + \ \beta_1 \mathrm{CV} + \ \beta_2 \ \mathrm{EKT} + \ \beta_3 \ \mathrm{IV} + \ \beta_4 \ \mathrm{IT} \ + \ \epsilon_3 \\ & \mathrm{FP} = \ \beta_0 \ + \ \beta_1 \mathrm{CV} + \ \beta_2 \ \mathrm{KTP} + \ \beta_3 \ \mathrm{IV} + \ \beta_4 \ \mathrm{IT} \ + \ \epsilon_4 \\ & \mathrm{OC} = \ \beta_0 \ + \ \beta_1 \mathrm{CV} + \ \beta_2 \ \mathrm{KTP} + \ \beta_3 \ \mathrm{IV} + \ \beta_4 \ \mathrm{IT} \ + \ \epsilon_5 \\ & \mathrm{FP}_{\mathrm{M}} = \ \beta_0 \ + \ \beta_1 \mathrm{CV} + \ \beta_2 \ \mathrm{KTP} + \ \beta_3 \ \mathrm{EKT} + \ \beta_4 \ \mathrm{IV} + \ \beta_5 \ \mathrm{IT} \ + \ \epsilon_6 \\ & \mathrm{OC}_{\mathrm{M}} = \ \beta_0 \ + \ \beta_1 \mathrm{CV} + \ \beta_2 \ \mathrm{KTP} + \ \beta_3 \ \mathrm{EKT} + \ \beta_4 \ \mathrm{IV} + \ \beta_5 \ \mathrm{IT} \ + \ \epsilon_7 \end{split}$$

- FP = Financial performance
- OC = Organisational change
- $FP_M$  = Financial performance with mediation
- $OC_M$  = Organisational change with mediation
- CV = Control variables: sector, firm size, involvement predecessor
- EKT = Extent of knowledge transfer
- KTP = Knowledge transfer practices
- IV = Interaction variables: main effects (duration succession process etc.)
- IT = Interaction terms: interaction effects (duration succession process x KTP etc.)

## 8 **RESULTS**

In this chapter the results of the statistical analyses discussed in section 7.3 are presented. First a description of the existing correlations between the individual variables used in the research will be discussed. Following this section, the factor analysis to reduce the amount of variables will be presented after which the outcomes of the regression analysis are discussed.

#### 8.1 FACTOR ANALYSIS

The research model discussed in chapter 6 was built up out of four variables: extent of knowledge transfer, knowledge transfer practices, financial performance and organisational change. The hypotheses are based on these four variables and predict relationships between them. In order to test these hypotheses the scales measuring the four variables need to be created.

To create the scales a component factor analysis with a varimax rotation and a cut-off point with eigenvalue of 1.0 is conducted in SPSS version 19 which is shown in Table 10.

Prior to performing the factor analysis the suitability of this statistical method for the obtained variables was assessed. The correlation matrix revealed multiple items to have significant correlations above .3 indicating strong relationships. Additionally, the Kaiser-Meyer-Oklin value measured .691 which is above the recommended value of .6. This together with the Barlett's Test of Sphericity, which turned out to be statistically significant, supports the reduction of variables by factor analysis [Pallant, 2005].

		Extent of knowledge transfer	Organisational change	Financial performance
1	Transfer of knowledge of market	,853		
2	Transfer of knowledge of clients/suppliers	,858		
3	Transfer of knowledge of internal organisation	,921		
4	Transfer of technical knowledge concerning products offered by company	,902		
5	Change in type of products		,877	
6	Change in technical aspects of products		,724	
7	Change in customers and suppliers		,714	
8	Change in strategy		,788	
9	Profitability last year			,862
10	Turnover last year compared to turnover in year before succession			,815
11	Profitability last year compared to profitability in year before succession			,792
	Percentage variance explained	33,02	19,51	16,89
	Cronbach's alpha	,921	,798	,776

Table 10 - Factor analysis

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

3 components extracted.

The first factor describes to what extent the knowledge has been transferred from predecessor to successor. The factor includes aspects as transfer of: knowledge of the market, knowledge of clients and suppliers, knowledge of the internal organization and technical knowledge concerning products offered by the company.
The second factor is an indication of the changes taking place within the organization. Areas that are included in this factor are changes in type of products, changes in technical aspects of the products offered by the company, changes in customers and suppliers and changes in strategy.

The third factor is focused on financial performance and is represented by the profitability in the last year, the turnover of last year compared to the turnover in the year before succession took place and the profitability of last year compared to the profitability in the year before succession took place.

### 8.2 PEARSON CORRELATION ANALYSIS

A Pearson correlation analysis has been performed using SPSS version 19 on all variables obtained from the factor analysis including the control and interaction variables discussed in section 0.

		1	2	3	4	5	6	7	8	9	10
1	Financial performance	1									
2	Organisational change	,043	1								
3	Knowledge transfer practices	-,017	-,272**	1							
4	Extent knowledge transfer	,022	-,093	,679***	1						
5	Duration succession	,105	,004	,284	,176**	1					
6	Work experience	-,136	,001	-,018	-,078	-,088	1				
7	Education	,328***	-,001	-,037	,123	,096	-,136	1			
8	Interaction duration	-,186	,168	-,041	-,051	-,242*	-,065	-,123	1		
9	Interaction work experience	-,210*	-,163	,109	,084	-,188	,028	-,202*	-,007	1	
10	Interaction education	,115	-,056	,239*	,439***	-,048	-,154	,232*	,286**	,051	1
*. Co	*. Correlation is significant at the 0.1 level (2-tailed).										

#### Table 11 - Correlation coefficients between variables

\*\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*\*. Correlation is significant at the 0.01 level (2-tailed).

Listwise deletion N=64

Table 11 shows the correlations that exist between variables used in the regression analysis. Several significant relationships exist of which the most strong and significant is between knowledge transfer practices and the extent of knowledge transfer. The relationship shows a positive direction which could have been expected, after all the more knowledge transfer practices are used, the more knowledge will be transferred. Moreover, when investigating the relationships between the dependent and independent variables, education correlates significantly (at a 0.01 level) with financial performance. The positive relationship suggests that managers with both a technical and management education will perform better financially then managers who have studied either one or a completely different subject. The interaction variable of work experience also shows a relationship with financial performance but is negative in direction.

The variable knowledge transfer practices has a significant and negative relationship with the dependent variable organisational change. Although in this research we would expect a relationship to exist, it is interesting that this correlation is negative indicating that the more knowledge transfer practices is used, the less the organisation will change. Nevertheless, one could argue that receiving internal knowledge from your predecessor would make the successor more prone to keeping things the way they were rather than innovating as this correlation also suggests. There is also a strong and very significant positive relationship between the interaction term education and the independent

variable extent of knowledge transfer. More interesting however, is the positive relationship (0.1 level) of the interaction term education with knowledge transfer practices. While the interaction term is created by multiplying with the extent to knowledge transfer (and can therefore be expected to relate to the independent variable itself), it has no such relation with the independent variable knowledge transfer practices but still shows a correlation.

Also, among the independent and interaction variables some highly significant correlations are visible. Duration of the succession process has a significant positive relationship with the extent to which knowledge is transferred. A result that was expected since the longer the process of succession takes, the more time there is for knowledge to be transferred and thus the more knowledge is transferred in the end. Furthermore, not surprisingly the interaction term of duration has a relationship with the main interaction variable duration. The same holds for education; here a trend in the relationship between the main variable and the interaction term is visible with a significance level of 0.1. Nevertheless, none of the other interaction variables shows a correlation with their respective interaction terms. Another trend that has appeared is between the main variable education and the interaction term of work experience. Finally, a significantly positive relationship exists between the two interaction terms of duration and education at a 0.05 level.

Although these correlations give an indication of the strength and direction of the relationships between variables, it is not an indication of a causal relationship and no conclusions can be made about the predictability of the dependent variables through the independent variables. For this a regression analysis has been conducted which is discussed in the next section.

## 8.3 REGRESSION ANALYSIS

Several hierarchical regression analyses have been conducted in SPSS version 19 of which the results will be discussed in this section. The results are indicated by six different indicators:

- B-value indicates the unique contribution the independent variable makes to the prediction of the dependent variable (when the effects of all other independent variables on the dependent variable in the model are held constant).
- t-value gives a rough indication of the impact of each independent variable on the dependent variable. A high t-value with a low p-value suggests the independent variable has a significantly large impact on the dependent variable.
- R-square indicates the amount of variance of the dependent variable that is explained by the independent variables included in the model. R-square therefore will give information about the goodness of fit of the model.
- Adjusted R-square is a modification of R-square that adjusts the value of R-square for the number of explanatory terms in the model. In such, when only a sample is taken for the research instead of the entire population, the adjusted R-square will give a more accurate representation of the fitness of the model than the regular R-square.
- R-square change indicates the changes in R-square when the last variable (or set of variables) is added.
- F-statistic represents the ratio of the improvement in prediction that results from fitting the model relative to the inaccuracy that still exists in the model. It provides a test of the

significance of the model when all the independent variables are taken together (rather than looking at the significance of all variables separately as the t-value indicates).

• DF (df1/df2) shows the degrees of freedom which indicate the statistical power of the model. The lower the ratio, the more statistical power the model has and the higher the chances that the predictions of the model are accurate.

All models in the regressions analyses have Variance Inflation Factors between 1.0 and 2.5. Thus, the influence of multicollinearity on the results of the analyses is reduced.

# 8.3.1 FINANCIAL PERFORMANCE

### Hypothesis 1a: Financial performance and Knowledge transfer practices

Hypothesis 1a proposes that the more different knowledge transfer practices are used between predecessor and successor, the more positive the financial performance after transfer will be. In order to test the hypothesis a hierarchical multiple regression analysis is conducted with two blocks of independent variables. The first block contains all control variables while in the second block the independent variable *Knowledge transfer practices* is added. The results of the regression analyses are presented in Table 12.

Model FIN2 in Table 12 shows that *Knowledge transfer practices* does not significantly predict *Financial performance* after transfer (B=-.007, p > .1). The variance of the dependent variable is only for 3% explained by the model. And with an F-ratio lower than 1 (F-ratio = .613) it can be concluded that the entire model is not significant for prediction of financial performance.

# *Hypothesis 2a: Mediation by Extent of knowledge transfer on the relationship between Financial performance and Knowledge transfer practices*

Hypothesis 2a proposes that the relationship between Knowledge transfer practices and the financial performance is either completely or partially mediated by the Extent of knowledge transfer. For testing this hypothesis a multiple hierarchical regression was conducted with three blocks of independent variables. First the control variables are added, after which Knowledge transfer practices and Extent of knowledge transfer are added respectively in two separate blocks. The results of this test can be found in Table 12 (model FIN3).

Although model FIN2 has already shown the absence of a relationship between Knowledge transfer practices and Financial performance, still a connection could exist in which the relationship is fully mediated by the Extent of knowledge transfer. Model FIN3 shows that after adding the Extent of knowledge transfer the coefficients for both independent variables stay insignificant. This together with the results of the Sobel test, it can be concluded that the mediation effect as predicted in the hypothesis is non-existent (z-value = -.560, p-value> .1). Nevertheless, model EKT2 in Table 13 indicates a significantly strong and positive relationship to exist between Knowledge transfer practices and Extent of knowledge transfer (B = .645, p < .01). This result is as expected: the more different knowledge transfer practices between predecessor and successor are used, the more

knowledge is transferred. No significant relationship was found between Extent of knowledge transfer and Financial performance<sup>6</sup>.

# *Hypothesis 3: Interaction by Duration of the succession process with the relationship between Knowledge transfer practices and Extent of knowledge transfer*

In order to test the intervening effect of the duration of the succession process on the relationship between Knowledge transfer practices and Extent of knowledge transfer, a multiple regression analysis was conducted with Extent of knowledge transfer as the dependent variable. Furthermore, the first block of independent variables included the Control variables, the second block the Knowledge transfer practices, the third block Duration of succession process and finally in the last block the interaction term between Duration and Knowledge transfer practices was added. The results are represented in Table 13 (Model EKT4).

It can be noticed that there is no main or intervening effect of duration of succession on the relationship between Extent of knowledge transfer and Knowledge transfer practices (B = .019, p > .1; B = -.012, p > .1).

# *Hypothesis 4a: Interaction by the Work experience of the successor with the relationship between Financial performance and Extent of knowledge transfer*

A similar process as described for testing the previous hypothesis was used here. Hypothesis 4a proposes an intervening effect to exist of work experience of the successor on the relationship between Financial performance and Extent of knowledge transfer. Model FIN7 in Table 12 presents the results for this regression analysis.

The coefficients for the moderator variable work experience showed no significant effect (B = -.018, p > .1) while the interaction term (work experience interacting with extent of knowledge transfer) is significant at the 0.1 level (B = -.030, p< .1). This indicates that the relationship between extent of knowledge transfer and financial performance is different for successors with a lot of work experience compared to successors who don't. It should be noted though that when all variables are included in the analysis, the significance of the interaction variable of Work experience disappears (B = -.024, p > .1; see model FIN9 in Table 12).

<sup>&</sup>lt;sup>6</sup> All possible combinations between variables have been analyzed through regression. However, due to the large amount of data this resulted in, not all analyses are presented in this report and are available upon request.

#### Table 12 – Multiple regression analysis (dependent variable: Financial performance, number of observations: 64)

Hypothesis			HP1a		HP2a				HP4c				HP4a					
	Model	FIN1	Model F	IN2	Model F	IN3	Model FI	N4	Model I	FIN5	Model F	IN6	Model FIN	7	Model I	IN8	Model	FIN9
Variables included	Contro variabl	l es	Control variable	s +	Control + Knowl	variables edge	Control v Extent of	ariables + knowledge	Control Extent o	variables + of	Control variable	es +	Control va Extent of l	riables + nowledge	Control indeper	variables + All ndent	Contro All vari	l variables + ables
			Knowled transfer practice	dge s	transfer + Extent knowled	practices of ge	transfer ·	+ Education	knowled + Educa Interact	dge transfer ation + tion	Extent o knowled transfer	of dge · + Work	transfer + experience Interaction	Work e + n work	variable	25		
	P	•	P	+	transfer	+	P	+	educati	on +	experie	t t	experience	*	P	+	P	+
Control variables	Б	L	В	ı	Ъ	L	Ъ	L .	Ъ	ı	В	ı	D	L	Б	l	Б	L .
Sector	442	-1.361	441	-1.344	434	-1.307	834	-2.621**	830	-2.586**	476	-1.453	604	-1.853	906	-2.774***	954	-2.934***
Firm size	,023	,195	,022	,186	,026	,218	-,022	-,196	-,022	-,201	,011	,090	,026	,225	-,058	-,508	-,019	-,168
Independent variables																		
Knowledge transfer practices			-,007	-,068	-,027	-,195									,064	,481	,093	,704
Extent of knowledge					,031	,215	-,052	-,525	-,068	-,627	-,001	-,013	,016	,157	-,129	-,924	-,168	-1,142
Duration of															,104	,884	,031	,250
Education							1,330	3.613***	1,303	3.445***					1.342	3.510***	1,105	2.785***
Work experience							_,	-,	_,	0,110	-,019	-1,202	-,018	-1,190	-,015	-,996	-,015	-1,035
Interaction terms																		
Duration * Knowledge																	-,131	-1,478
Education * Extent of knowledge transfer									,092	,369							,261	,968
Work experience * Extent of knowledge transfer													-,030	-2,006*			-,024	-1,621
R-square	_,	030	,0,	30	,(	030		,206		,207	,0	53	,1	14		,237		,297
Adjusted R-square	-,	,002	-,0	19	-,	035		,152		,139	-,(	)11	,0	38		,141		,164
R-square change	,	030	,0	00	,(	001		,176		,002	,0	23	,0	51		,206		,060
F-statistic	,	932	,6	13	4,	464	3,	817***	3	,036**	,8	26	1,5	00	2	2,481**	2	2,239**
DF (df1/df2)	2	2/61	1/	60	1	/59		1/59		1/58	1/	′59	1/	58		5/56		8/53

\*. Significant at the 0.1 level (2-tailed); \*\*. Significant at the 0.05 level (2-tailed); \*\*\*. Significant at the 0.01 level (2-tailed)

#### Table 13 - Multiple regression analysis (dependent variable: Extent of knowledge transfer, number of observations: 64)

Hypothesis							HP3		
	Model EKT1		Model EKT2	2	Model EKT	3	Model EKT	4	
Variables included	Control variables		Control vari transfer pra	Control variables + Knowledge transfer practices		Control variables + Knowledge transfer practices + Duration of succession		Control variables + Knowledge transfer practices + Duration of succession + Interaction duration	
	В	t	В	t	В	t	В	t	
Control variables									
Firm size	-,094	-,239	-,216	-,738	-,220	-,745	-,220	-,740	
Sector	-,210	-1,472	-,140	-1,321	-,144	-1,325	-,143	-1,289	
Independent variables									
Knowledge transfer practices			,645	7,208***	,639	6,749***	,639	6,693***	
Extent of knowledge transfer									
Duration of succession process					,024	,206	,019	,160	
Education									
Work experience									
Interaction terms									
Duration * Knowledge transfer practices							-,012	-,144	
Education * Extent of knowledge transfer									
Work experience * Extent of knowledge transfer									

R-square	,039	,485	,485	,486
Adjusted R-square	,008	,459	,451	,441
R-square change	,039	,446	,000	,000
F-statistic	1,248	18,845***	13,918***	10,954***
DF (df1/df2)	2/61	1/60	1/59	1/58

\*. Significant at the 0.1 level (2-tailed); \*\*. Significant at the 0.05 level (2-tailed); \*\*\*. Significant at the 0.01 level (2-tailed)

# *Hypothesis 4c: Interaction by the Education of the successor with the relationship between Financial performance and Extent of knowledge transfer*

Hypothesis 4c proposes that the relationship between Financial performance and Extent of knowledge transfer is different in firms where successors have a technical and management education compared to firms in which successors have only completed one (or none) of these studies. Model FIN5 in Table 12 presents the results for this regression analysis.

The results show that the variable Education has a significant effect on the Financial performance of the company after transfer (B = 1.303, p < .01). Firms with successors with a combined education in technical and management studies, do better financially than firms in which the successor only has one of or none of these studies on their resume. Moreover, by adding education to the model the control variable sector suddenly also become significant (B = -.830, p < .05). This indicates there is a difference in the effects of education on financial performance between technical and non-technical sectors. The predicted interaction effect of education is however absent (B = .092, p > .1).

### 8.3.2 ORGANISATIONAL CHANGE

#### Hypothesis 1b: Organisational change and Knowledge transfer practices

Hypothesis 1b proposes that firms where multiple different knowledge transfer practices are used to transfer knowledge between predecessor and successor implement more changes after the transfer has been completed than firms where less different knowledge transfer practices are used. To test this hypothesis a hierarchical regression analysis is used similar to the one used for hypothesis 1a with the only difference being the dependent variable used: instead of Financial performance the variable Organisational change is used. The results for all regression analyses in this section can be found in Table 14

As model ORG2 shows, a significant but negative relationship between Knowledge transfer practices and Organisational change was found (B = -.207, p < .05). However, the adjusted R-square indicates that still only 5.4% of the variance of Organisational change is explained by Knowledge transfer practices (when controlled for firm size and sector). It is interesting to mention that when only the formal knowledge transfer practices are used in the regression (transfer through visiting the customers and suppliers together and other formal methods (e.g. documents, computer files)) the relationship is insignificant (B = -.230, p > .1). For the informal transfer practices (transfer through managing the daily activities of the company together and informal conversation) the relationship is significant and much stronger than when all Knowledge transfer practices are used in one variable (B = -.868, p < .05).

#### Table 14 - Multiple regression analysis (dependent variable: Organisational change, number of observations: 64)

Hypothesis			HP1b		HP2b				HP4d				HP4b					
	Model	ORG1	Model	ORG2	Model	ORG3	Model	ORG4	Model	ORG5	Model C	DRG6	Model	ORG7	Model C	DRG8	Model C	DRG9
Variables included	Contro		Contro	l variables	Contro	l variables	Contro	I	Control	variables	Control	variables +	Contro	l variables +	Control	variables +	Control	variables + All
	variable	es	+ Knov	vledge	+ Knov	/ledge	variabl	es +	+ Exten	t of	Extent o	of	Extent	of	All indep	pendent	variable	s
			transfe	er practices	transfe	r practices	Extent	of	knowle	dge	knowled	lge transfer	knowle	edge transfer	variable	s		
					+ Exter	nt of	knowle	edge	transfe	r +	+ Work	experience	+ Worl	c experience				
					knowle	edge	transfe	er +	Educati	on +			+ Inter	action work				
					transfe	r	Educat	ion	Interac	tion			experie	ence				
									educati	on								
	В	t	В	t	В	t	В	t	В	t	В	t	В	t	В	t	В	t
Control variables																		
Firm size	,198	,658	,237	,815	,262	,898,	,184	,569	,182	,559	,187	,612	,120	,388	,309	,963	,260	,805
Sector	-,100	-,920	-,122	-1,164	-,106	-,991	-,118	-1,056	-,118	-1,045	-,119	-1,063	-,111	-,990	-,118	-1,053	-,128	-1,131
Independent variables																		
Knowledge transfer			-,207	-2,335**	-,284	-2,334**									-,324	-2,482**	-,321	-2,456**
practices																		
Extent of knowledge					,118	,921	-,087	-,870	-,082	-,737	-,087	-,882	-,078	-,788	,137	1,001	,173	1,188
transfer																		
Duration of															,103	,886	,127	1,029
succession process																		
Education							,020	,052	,028	,073					-,202	-,539	-,103	-,263
Work experience											-,002	-,111	-,001	-,088	,001	,054	,002	,129
Interaction terms																		
Duration *																	,146	1,661*
Knowledge transfer																		
practices																		
Education * Extent of									-,030	-,116							-,175	-,656
knowledge transfer																		
Work experience *													-,016	-1,093			-,009	-,640
Extent of knowledge																		
transfer																		
R-square	,0	17		,099		,112	,	030	,	,030	,	.030		,050		,128		,181
Adjusted R-square	-,:	15		,054		,052	-,	,036	-	,054	-	,036		-,032		,019		,027
R-square change	,0	17		,082		,013	,	000	,	,000		.000		,020		,016		,053
F-statistic	,5	90		,098*		,130	,	453	,	,359		456		,605		,333		,330
DF (df1/df2)	2/	61		1/60		1/59	1	./58	1	1/59	-	1/59		1/58		5/58		8/55

\*. Significant at the 0.1 level (2-tailed); \*\*. Significant at the 0.05 level (2-tailed); \*\*\*. Significant at the 0.01 level (2-tailed)

# *Hypothesis 2b: Mediation by Extent of knowledge transfer on the relationship between Organisational change and Knowledge transfer practices*

To test whether Extent of knowledge transfer mediates the relationship between organisational change and Knowledge transfer practices, another hierarchical regression analysis was conducted. Here the first block contained the control variables, second block included Knowledge transfer practices while the last block comprises Extent of knowledge transfer. The result of this regression is presented by model ORG3 in Table 14.

There is no significant mediating impact of Extent of knowledge transfer on the relationship between Organisational change and Knowledge transfer practices; after adding the last block Knowledge transfer practices stays significant while Extent of knowledge transfer shows no significance (respectively B = -.284, p < .05; B = .118, p > .1). By adding Extent of knowledge transfer to the model only an extra 1.3% of the variance of the dependent variable is explained by the model while the adjusted R-square also decreases. Again the Sobel test is also not significant indicating Extent of knowledge transfer does not play a mediating role between Knowledge transfer practices and Financial performance (z-value = -.880, p > .1). When only analysing the relationship between Extent of knowledge transfer and Organisational change, the results are also not significant (B = -.086, p > .1)<sup>7</sup>.

# *Hypothesis 4b: Interaction by the work experience of the successor with the relationship between Organisational change and Extent of knowledge transfer*

Hypothesis 4b proposed that work experience of the successor has an intervening effect on the relationship between Organisational change and Extent of knowledge transfer. The first block in the hierarchical regression analysis contains the control variables, the second only the Extent of knowledge transfer, the third Work experience and the fourth and last block comprises of the computed interaction term. Model ORG6 and ORG7 in Table 14 present the results.

By adding Work experience to the model no change can be detected from the R-square indicating this variable does not add anything to explaining the variance in Organisational change (R-square change = .000). Moreover, model ORG6 shows no significant contribution of Work experience to Organisational change (B = -.002, p > .1). The interaction effect is slightly more effective and an additional 2.0% of variance is explained as model ORG7 shows. Nevertheless, the interaction term does not significantly affect the relationship between Extent of knowledge transfer and Organisational change (B = -.016, p > .1). This means that successors with more work experience are not more likely to have a stronger relationship between Extent of knowledge transfer and Organisational change.

<sup>&</sup>lt;sup>7</sup> All possible combinations between variables have been analyzed through regression. However, due to the large amount of data this resulted in, not all analyses are presented in this report and are available upon request.

# *Hypothesis 4d: Interaction by the Education of the successor with the relationship between Organisational change and Extent of knowledge transfer*

The last hypothesis 4d suggests that the education of the successor intervenes in the relationship between Organisational change and Extent of knowledge transfer. Successors who have an education existing of both a technical and management study are more likely to benefit from a high amount of knowledge transferred and implement changes in the organisation than successors who do not. The same approach with hierarchical regression analysis is taken as with hypothesis 4b and the results are presented in models ORG4 and ORG5 in Table 14.

As model ORG4 shows no significant main effect of Education on Organisational change can be found (B = .020, p > .1). Model ORG5 shows that the interaction effect of Education on the relationship between Extent of knowledge transfer and Organisational change is also not significant (B = -.030, p > .1). In both cases the addition of these variables has almost no effect on the R-square with absolutely no changes detectable (in both cases R-square change = .000).

Finally, it has to be noted that when all independent variables and interaction terms have been added, the interaction term of Duration of succession process and Knowledge transfer practices has a small but significant influence in the model (B = .146, p < .1).

#### 9 DISCUSSION OF THE RESULTS

#### 9.1 FAMILY BUSINESSES AND KNOWLEDGE TRANSFER

Knowledge transfer has influence on the post-transfer performance of a family business. A significant result was found for hypothesis 1b (see also section 8.3) which showed that when more different knowledge transfer practices were used to transfer knowledge between predecessor and successor, there would be less change within the organisation. An interesting result though since it contradicts earlier findings in which knowledge transfer (and in particular the use of knowledge transfer practices) positively influenced organisational performance and innovation [Zack, McKeen et al., 2009]. Family businesses are known to linger in the past because founders have an aversion to change [Flören and Jansen, 2005]. This idea that changes are disruptive to the company could be transferred to the successor and this combined with the fear of successors to fail and destroy the company which was built-up by the predecessor(s) [Flören and Jansen, 2005] could explain why transfer or internal knowledge would negatively influence the amount of changes in a post-transfer family firm.

Although not part of the main research, a separate regression analysis was performed to study the difference in influence of informal and formal knowledge transfer practices on the post-transfer performance. The results showed that informal transfer practices had a significantly negative and strong effect (B = -.868, p < .05) on organisational change while formal practices had no effect at all.

The research also showed that firms in which successors completed both a technical and management study perform significantly better in financial terms than firms in which successors do not. This supports the argumentation in which it was suggested that not only management qualities are important for a general manager. Based on these two results it can be argued that knowledge obtained from external sources like through education or work experience is more beneficial for success in the post-transfer performance than the transfer of internal knowledge obtained from the predecessor. Although a direct effect of education on post-transfer performance was found, hypothesis 4c was not supported in its prediction of interaction effects.

Moreover, the analysis revealed a significant and strong relationship to exist between knowledge transfer practices and extent of knowledge transfer. Literature already suggested a positive relationship to exist, now this is supported by the results of this research (B =.647, p < .001). This means that the more different knowledge transfer practices are used the more knowledge is transferred. Further analysis with an additional regression analyses showed a similar strong and positive relationship between the frequency to which knowledge transfer practices in general are used and the extent of knowledge transfer (B = .763, p < .001)<sup>8</sup>. Nevertheless, hypothesis 3 indicating interaction effects of duration of the succession was not supported. This suggests that the relationship between Knowledge transfer practices and Extent of knowledge transfer is the same for successors who had a long period of succession and those who had a shorter period.

<sup>&</sup>lt;sup>8</sup> The variable for frequency of knowledge transfer practices was created by taking the mean of transfer of knowledge through: informal conversation, sharing daily management, formal documents and joint visits to customers and suppliers. The analysis was conducted in the same way as the analysis in hypothesis 2a.

Additionally, firms in non-technical sectors also show a better financial performance than firms in technical sectors. The companies included in the research all have transferred management within the last 5 years. Within this period economies around the world were confronted with a global financial crisis and companies' sales and profits decreased. Especially in the industrial and construction sectors the effects were felt. This could explain the significant differences found for technical and non-technical sectors with respect to financial performance.

Interestingly enough there was no evidence for the mediating effect of the extent of knowledge transfer on the relationship between knowledge transfer practices and organisational change as was formulated in hypothesis 2b. This means that the negative relationship between knowledge transfer practices and organisational change cannot simply be explained by the transfer of internal knowledge and another concept might be the connecting link. Earlier it was explained that family businesses are conservative and often have an aversion to change. They would rather stick with their winning formula than enter a risky period of unknowns when the organisation is changed. Moreover, in family businesses change does not only mean commercial risks but also the risk for family conflicts to arise, for example when certain customs implemented by family members are disturbed when the philosophy of the company changes [Flören and Jansen, 2005]. This fear of change and conservative attitude can easily be transferred from one generation to the other, especially when a close relationship and good communication channels exists between predecessor and successor. Using knowledge transfer practices means communicating, the more these practices are used the more is communicated and the higher the chance for this fear of change to transfer from one generation to the next.

Work experience has an intervening effect on the relationship between financial performance and extent of knowledge transfer. It should be taken into consideration that the significance level and the B-value were low indicating this variable has a weak impact. Moreover, this effect disappeared when the other variables were included into the model. And since no significant relationship is found between extent of knowledge transfer and financial performance it can only be concluded that between successors with a high number of years work experience and those who have limited work experience, the relationship for the extent of knowledge transfer and financial performance it can be concluded that be different. An exact indication of the direction cannot be provided. Nevertheless, it has to be concluded that hypothesis 4a is supported by the results.

Unfortunately, no significant relationship could be found between Knowledge transfer practices and Financial performance therefore hypothesis 1a is not supported. The mediation effect of Extent of knowledge transfer on the relationship between Knowledge transfer practices and Financial performance was also absent providing no support to hypotheses 2a. Even when interaction effects were taken into account there was no change in the mediating effect or on the effect of variables predicting post-transfer performance which all remained insignificant. In several studies researchers have positively linked knowledge management to financial performance and non-financial performance indicators such as quality, innovation and productivity [Tanriverdi, 2005; Zack, McKeen et al., 2009]. Although the relationship Tanriverdi [2005] found between knowledge management and financial performance was weak, it could have been expected that the variables presented here would have provided a similar result. Nevertheless, Zack, McKeen et al. [2009] showed no direct relationship to exist between financial performance and knowledge management practices. Instead, the authors found organisational performance indicators to fully mediate this relationship. The knowledge management practices enable organisational performance which in turn enables financial performance. Although this research looks at knowledge management practices in general instead of a more narrow focus on knowledge transfer practices as was the case in this research, it could explain the absence of significant relationships between Knowledge transfer practices and Financial performance.

Finally, hypotheses 4b and 4d were both not supported by the data analysis which indicates that there is no difference in the relationship between Knowledge transfer practices and Organisational change when comparing successors on education or work experience.

### 9.2 LIMITATIONS OF THE RESEARCH

The current research has a few limitations that should be considered and will be discussed in this section. First of all, the sample used in this research contains only companies in which the transfer in management took place within the past 5 years. In this period the world was faced with a global financial crisis which severely affected the performance of companies. For this research the financial performance is measured by comparing the financial performance in the year before and in the year after the transfer which all took place between 2005 and 2011. It could therefore be that the financial performance measured was negatively influenced by the developments surrounding the financial crisis and therefore not a good indicator of the post-transfer performance. These influences might have limited the predictability of financial performance by the variables knowledge transfer practices and the extent of knowledge transfer. In this research such environmental influences are not controlled for. To decrease the possibility of environmental aspects influencing the result it is recommended in future researches widen the range in which transfers took place to include also other periods or possibly find a control variable that can be implemented in the analyses.

Secondly, the sample used for the current study existed of 74 respondents. Due to listwise deletion in analyses this number was often reduced to less than 70 which compromised the generalizability of the research. Although the ratio of observations per independent variables still remained above the 5:1 limit, the recommended ratio of 15 to 20:1 was not reached [Hair, Black et al., 2005]. This in turn meant that the amount of variables to be used in the analyses was limited. Thus, it is recommended to repeat the research on a larger sample and increase the statistical power of the results. Moreover, due to the small size of the sample, the number of technical family businesses was too little to properly research differences between technical and non-technical sectors.

Also, the post-transfer performance is measured by perception of the respondent. This means the result is more subjective in comparison to actual financial details that would provide a more objective view. Nevertheless, it is difficult to obtain such financial information from the companies since many are unwilling to provide it out of fear for crucial information leaking to competitors.

Furthermore, the current research is one of the first to be conducted on knowledge transfer between predecessor and successor in family businesses. Some attention has been given to this knowledge transfer; however, this was mostly theoretical with little empirical research conducted in this area. This had its impact on the design of the survey. Most of the questions used have been designed specifically for this research and only partially based on existing questions used in studies into knowledge management issues in general. Even though the questions were developed together with experts in the field of family businesses and knowledge management, the validity and reliability of

the questions is not supported by other studies. It could have affected the end results of the research. Moreover, the amount of questions asked in the survey was limited because of the type of data collection chosen and the fact this research was part of a larger study in which other topics were examined as well.

Finally, this study was conducted on a quantitative level. The research is part of a larger research conducted which also contains other areas of interest into family businesses. Due to the large amount of different issues and the possibility to reach a larger sample it was decided to conduct a quantitative rather than a qualitative research. Nevertheless, a qualitative research can provide a better understanding of the personal experiences of the predecessor and successor with the knowledge transfer process and can better describe the why and how of the process. On the other hand, quantitative analysis is better used for analysis of hypothesis and less time-consuming in data collection and analysis. Still, to obtain a better insight into the aspects that are important in knowledge transfer during succession in family businesses, it might have been better to do a more qualitative exploratory research. Later the findings can then be supported by quantitative research results. Hence, it is recommended that future research is conducted in a combination of quantitative and qualitative research to better capture the complex issue of knowledge transfer.

## 9.3 DIRECTIONS FOR FUTURE RESEARCH

Most research concerning the knowledge transfer of predecessor to successor in family business during transfer is theoretical and little empirical evidence of the process or important issues is given. This however does not provide a realistic view of the topic and more practical research should be conducted to add substantial results to this subject. Although this study adds to the body of literature on empirical research surrounding this subject, there is still more to discover in the field of family businesses.

First of all, family firms contribute largely to the world economy but often fail to survive succession. Although the subject of succession has been more thoroughly investigated it has always focused on similar topics like duration and planning. This research has shown that more issues are important when transferring management from one generation to the next. Therefore, more research should be directed to include other topics that might be influential to the success of the management transfer.

Secondly, as described in the previous section, this research has been limited which could have influenced the results. To provide a more conclusive result, in future research the sample needs to be increased to make the research more generalizable and provide the ability to test multiple variables without compromising the validity of the research. Moreover, the respondents in the sample should include companies that have undergone transfers in different period of times to decrease the possible influence of environmental issues on the results.

Furthermore, a closer look needs to be taken at the questionnaire. The currently used questionnaire contained questions not tested in previous studies but developed with other researchers who are experts in the fields involved in this research. Although this peer debriefing ensures validity of the results, it is possible that different questions would have been more effective for this research. Also, the amount of questions asked was limited due to this research being part of a combined study in which other issues were also examined. This resulted in the areas in which knowledge was

transferred and the amount of transfer practices examined to be limited. It is therefore recommended that in future research other areas are also included.

The final recommendation is to conduct a more in-depth study into the details of knowledge transfer between predecessor and successor. A qualitative approach provides more insight into the methods used to transfer knowledge, the importance of knowledge transfer for the entrepreneur, the influence of emotional issues on this knowledge transfer, conflicts that may arise disturbing the process of knowledge transfer and other issues that might influence the process.

# 9.4 PRACTICAL IMPLICATIONS

The results of this research actually recommend the opposite of what this research was trying to indicate. Namely that using knowledge transfer practices to transfer knowledge between predecessor and successor can inhibit organisational change. And since successors with several educational directions (technical and management) were more successful financially than their counterparts who only studied in one direction, the research actually suggests that acquiring knowledge from external sources is more beneficial for the post-transfer performance than transferring internal knowledge from predecessor to successor.

Still, no direct proof was given that the transfer of knowledge from predecessor to successor actually negatively (or positively) influences the financial performance of the company after transfer. It can therefore not be concluded that the post- transfer performance of the family business is negatively influenced (or positively) by knowledge transfer from predecessor to successor.

This means that in practical terms it is advisable to successors to not rely on the knowledge transfer from the predecessor but also look to other sources that could provide knowledge on how to help the company grow and enhance its performance. Education is one factor that has a positive influence and should be used to acquire additional knowledge before joining the family firm. It should however be taken into account that the focus of such an education should be multidirectional and include more than for example just technical or just management issues. The more a successor knows about everything, the better it will be for the company's financial performance in the long run.

Additionally, the research shows that family businesses are an important part of the world economy in financial terms as well as numbers. Nevertheless, no attention is given by Dutch studies to family businesses and in particular to the complexity of these kinds of firms and the issues they struggle with when succession is taking place. It is important that students (especially in management studies) are educated in the uniqueness of the family business and what the particular strengths and weaknesses are of the family business. It will not only positively promote the family business as an employer but provide those who are a potential successor of a family business more insight in what is in store for them in the future and what they can do to make the succession a success.

Finally, the contradicting results create the need for more research into the field of knowledge transfer in family businesses during succession. It also indicates that there are more subjects within the family business research to be explored and that widening the field could present some interesting new results which help family businesses perform even better in the future.

### **10 CONCLUSIONS**

Family businesses play an important role in the global economy. In the Netherlands they make up about 69% of all established companies and are responsible for over 40% of total employment opportunities and 50% of its Gross National Product. Their resilience in times of crisis and high performance records compared to non-family firms has sparked the interest of academics and research in the topic is increasingly growing. Although family firms seem to have numerous advantages their special makeup also poses numerous threats to be overcome. Most difficulties arise due to the combination of the family and business system which each have their own (and often contradicting) objectives. One of the processes in which the combination of these systems has caused many family businesses to close down is succession. In general founders of family firms manage the company for more than 2 years before they decide to step down and transfer to the next generation. Because of their long tenure and deep emotional connection with the company, this is a difficult process for any founder and procrastinating even the thought of it is general practice among founders. Nevertheless, at one point the founder will be confronted with his own mortality and action needs to be taken to ensure the continuity of the company.

Many issues surrounding succession in family businesses have received interest but the important subject of knowledge transfer has generally been neglected. Although academic literature identifies the uniqueness of the knowledge stored in the mind of the founder of a family business, few have conducted empirical research into the subject. Knowledge is seen as the most important asset of a company in today's economy and could provide sustained competitive advantage to a company. To sustain the advantage knowledge needs to be continuously developed and transferred in order to retain it within the company even when an employee leaves. The same holds for the founder who has collected valuable and unique knowledge that needs to be transferred to his successor in order to ensure continuity of the company. The purpose of this paper on knowledge transfer from predecessor to successor in family businesses is to shed light on the topic and identify the influence this knowledge transfer has on the performance of the firm after transfer.

The literature research and empirical research are conducted to provide answers to the questions posed in section 0. The main question that forms the basis for this paper is as follows:

## To what extent does the transfer of internal knowledge between predecessor and successor influence the post-transfer performance in a technical family business?

First of all, literature indicates many classifications can be made regarding the different types of knowledge. The most common distinction however is explicit and tacit knowledge. Family businesses are believed to have a unique bundle of resources and capabilities generated by the involvement of the family system which is called 'familiness'. Researchers argue that this provides sustained competitive advantage only when it is managed and upgraded appropriately. The knowledge to understand this strategic process is often embedded in the entrepreneur or founder of the family businesse. This shows that in family businesses it is important for predecessors to transfer tacit as well as explicit knowledge.

Secondly, the results from the theoretical research also showed that knowledge transfer takes place in a similar way in family businesses as in non-family businesses. However, some differences exist. In family businesses for example, knowledge is not just transferred through formal or informal channels at work but also during family gatherings such as birthdays, family reunions or wedding parties. The transfer of knowledge already takes place gradually during the lifetime of a successor instead of only the period while working in the family business. Moreover, predecessors who are related to the successor tend to keep involved in the company after transfer for a longer period than predecessors who are not related stimulating knowledge transfer.

The empirical study shows that knowledge transfer practices negatively influences the tendency for organisational change. Innovation seems to decrease when contact and communication between predecessor and successor intensifies by the use of knowledge transfer practices. Managers of family firms are known to be conservative and might transfer this fear for change to their successors as well. Another explanation could be the extraordinary fear of failing and destroying the company that many successors in family businesses have. This could affect their willingness to change the organisation, after all, why change a winning formula? Also, the education of the successor has an influence on the financial performance of the company after transfer. Firms in which successors were in control who completed a management and a technical study, showed a better financial performance after transfer. It indicates that it is more beneficial in terms of post-transfer performance for the successor to obtain knowledge from external sources instead of internal sources like the predecessor of the company. This conclusion is further supported by the fact that informal ways of knowledge transfer have a stronger negative effect on the tendency for successor to implement organisational changes. The formal transfer practice where successor and predecessor visit customers and suppliers together also means a way of gathering external knowledge. Furthermore, informal knowledge transfer practices include more personal contact between the successor and predecessor than the formal ways where computer files and other documentation is used.

It can also be concluded that the more different knowledge transfer practices are used, the more knowledge is transferred. It is therefore more beneficial for predecessors and successors to use multiple forms of knowledge transfer practices. Moreover, further analysis showed that the frequency in which a practice is used is also important and positively influences the amount of knowledge transferred.

Furthermore, the sector a company is active in has a direct influence on the financial performance of the company. The results indicated that non-technical firms perform better on a financial level than technical companies. A possible explanation for this outcome could be that it was influenced by environmental conditions since especially technology sectors are coping with crisis issues. Work experience, the other successor characteristic that was included in the analyses, showed a weak interaction effect on the relationship between extent of knowledge transfer and financial performance. It indicated a difference in the relationship for successors with work experience and those who don't.

Although many interesting results (as described previously) have been found, the main research question in this report could only be answered partially since there was no empirical evidence suggesting a relationship between the transfer of internal knowledge between predecessor and successor and the post-transfer financial performance. These results contradict previous research in which knowledge management practices used in companies in general have been linked to financial performance. Also, it can be concluded that using different types of knowledge transfer is not proven

to influence the post-transfer financial performance since the empirical research did not show a significant relationship. Furthermore, the fourth question proposed a mediating effect of the extent of knowledge transfer on the relationship which was also not found in the empirical research. Additionally, the duration of the succession process proved to have no influence on the relationship between knowledge transfer practices and extent of knowledge transfer.

It needs to be taken into account that there are some issues that might have influenced the results of this research. First of all, the current research was specifically focused on family businesses and knowledge transfer which makes the comparison with other researches more difficult. Secondly, environmental effects such as the current financial crisis the global economy is in could have affected the results for financial performance. Also, the questions developed in this study were new or loosely based upon questions in other knowledge management studies and therefore validity of the questionnaire is not completely guaranteed. Finally, the sample was relatively small and could have affected the regression analyses as well.

To conclude, this paper has provided some very interesting new information on the topic of knowledge transfer between predecessor and successor in family firms. The empirical results indicate that obtaining knowledge from external sources is better for the success of the post-transfer performance than obtaining knowledge from internal sources like the predecessor of the company. Although, it should be noted that there is no empirical evidence that internal knowledge transfer influences the financial performance of the post-transfer period. The main question is therefore only partly answered. In future research based on this subject the limitations brought forward in this research should be taken into account to minimise unwanted influences on the results. Nevertheless, the research can help future successors in family businesses make the post-transfer performance period more successful.

### **11 BIBLIOGRAPHY**

(2011). "Het ontstaan van het innovatieplatform." Retrieved June, 2011, from <u>http://www.innovatieplatform.nl/geschiedenis-innovatieplatform/</u>.

(2011). "Knowledge". Merriam-Webster Dictionary.

(2011). "Technology". Business Dictionary.com.

Abbas, R., T. Davies, et al. (1989). <u>Staying the Course: Survival Characteristics of the Family-Owned</u> <u>Business</u>. London, UK: Stoy Hayward.

Adams, D. R. (July 2011). "Introduction to Regression." from <u>http://facstaff.uww.edu/eamond/road/216-Research\_Methods/Slides/Slides-SHW/Printed/Regression%20tutorial.pdf</u>.

Alavi, M. and D. E. Leidner (2001). "Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues." <u>MIS Quarterly</u> **25**(1): 107-136.

American Family Business Survey (2007). American Family Business Survey, MassMutual.

Anderson, R. C. and D. M. Reeb (2003). "Founding-Family Ownership and Firm Performance: Evidence from the S&P 500." <u>The Journal of Finance</u> **58**(3): 1301-1327.

Andreu, R. and S. Sieber (2011). External and Internal Knowledge in Organizations. <u>Encyclopedia of Knowledge Management</u>. D. Schwartz. Hershey, PA, Idea Group Publishing. **2nd ed.:** 173-179.

Andriessen, J. H. E. (2006). Chapter 14: Managing knowledge processes. <u>Managing Technology and</u> <u>Innovaiton: an introduction</u>. R. M. Verburg, R. J. Ortt and W. M. Dicke. London, UK, Routledge.

ANP (2008). Balkenende: kenniswerkers zoeken in buitenland. de Volkskrant.

Aronoff, C. and J. Ward (1992). <u>Family Business Succession: The Final Test of Greatness</u>. Marietta, GA: Business Owners Resources.

Aronoff, C. E. and J. L. Ward (1995). "Family-Owned Businesses: A Thing of the Past or a Model for the Future?" <u>Family Business Review</u> **8**(2): 121-130.

Astrachan, J. H., S. B. Klein, et al. (2002). "The F-PEC Scale of Family Influence: A Proposal for Solving the Family Business Definition Problem." <u>Family Business Review</u> **15**(1): 45-58.

Astrachan, J. H. and T. A. Kolenko (1994). "A Neglected Factor Explaining Family Business Success: Human Resource Practices." <u>Family Business Review</u> **7**(3): 251-262.

Barach, J. A. and J. B. Ganitsky (1995). "Successful Succession in Family Business." <u>Family Business</u> <u>Review</u> **8**(2): 131-155.

Barney, J. (1991). "Firm Resources and Sustained Competitive Advantage." <u>Journal of Management</u> **17**(1): 99.

Bartlett, J. (2000). Familiar Quotations. N. H. Dole. Boston, MA, Little, Brown Book Group.

Beek, M. v. (2004). Succession in family businesses: an innovative approach. <u>Faculteit der</u> <u>Bedrijfskunde</u>. Rotterdam, The Netherlands, Erasmus Universiteit Rotterdam. **Master of Business Administration**.

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Belussi, F. (1999). Accumulation of tacit knowledge and division of cognitive labour in the industrial district/local production system. <u>Evolution of Industrial Districts</u>. Jena, Germany.

Berent, M., L. Uhlaner, et al. (2009). Planning and successsor characteristic as determinants of successful ownership transfers in SME's. <u>Scales paper</u>. Zoetermeer, the Netherlands, EIM Policy and Research.

Bracci, E. and E. Vagnoni (2011). "Understanding Small Family Business Succession in a Knowledge Management Perspective." <u>The IUP Journal of Knowledge Management, Vol. IX, No. 1, pp. 7-36, January 2011</u>.

Breton-Miller, I. L., D. Miller, et al. (2004). "Toward an Integrative Model of Effective FOB Succession." <u>Entrepreneurship Theory and Practice</u> **28**(4): 305-328.

Cabrera-Suárez, K., P. De Saá-Pérez, et al. (2001). "The Succession Process from a Resource- and Knowledge-Based View of the Family Firm." <u>Family Business Review</u> **14**(1): 37-46.

Callahan, S. (2006). "Data, Information, Knowledge: a sensemaking perspective." Retrieved June, 2011, from <u>http://www.anecdote.com.au/archives/2006/03/data\_informatio.html</u>.

Carlock, R. S. and J. L. Ward (2001). <u>Strategic Planning for The Family Business</u>. Hampshire, UK: Palgrave Macmillan.

Casson, M., B. Yeung, et al. (2008). <u>The Oxford Handbook of Entrepreneurship</u>. Oxford: Oxford University Press.

Centraal Bureau voor de Statistiek (2011a). "SBI - Standaard Bedrijfsindeling." Retrieved 28 April 2011, from <u>http://www.cbs.nl/nl-NL/menu/methoden/classificaties/overzicht/sbi/default.htm</u>.

Centraal Bureau voor de Statistiek (2011b). "Bedrijven; vestigingen naar economische activiteit (SBI 2008) en regio." Retrieved 6 April 2011, from

http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=80231ned&D1=0&D2=0-1,48,66,442,455,475,515,757,810,832,878,928,940,1001,1068,1083,1111,1158,1219&D3=0,14&D4=1 &HDR=T,G3&STB=G2,G1&VW=T.

Chappell, T. (2009). "Plato on Knowledge in the Theaetetus." <u>The Stanford Encyclopedia of</u> <u>Philosophy</u>. Retrieved June, 2011, from <u>http://plato.stanford.edu/archives/fall2009/entries/plato-theaetetus/</u>.

Chirico, F. and W. Laurier (2008). "The Creation, Sharing and Transfer of Knowledge in Family Business." Journal of Small Business and Entrepreneurship **21**(4): 413-434.

Chrisman, J. J., J. H. Chua, et al. (2003). "Current Trends and Future Directions in Family Business Management Studies: Toward a Theory of the Family Firm." <u>Coleman White Paper series</u>.

Coleman, S. and M. Carsky (1999). "Sources of Capital for Small Family-Owned Businesses." <u>Family</u> <u>Business Review</u> **12**(1): 73-84.

Cromie, S., B. Stephenson, et al. (1995). "The Management of Family Firms: An Empirical Investigation." <u>International Small Business Journal</u> **13**(4): 11-34.

Daniels, T. L. (2009). Enabling Security, Stability, Transition, and Reconstruction Operations through Knowledge Management. <u>USAWC STRATEGY RESEARCH PROJECT</u>. Carlisle Barracks, PA, U.S. Army War College.

Davenport, T. H. (1997). "Ten principles of knowledge management and four case studies." <u>Knowledge and Process Management</u> **4**(3): 187-208.

Davenport, T. H. and L. Prusak (1998). <u>Working Knowledge: How Organizations Manage What They</u> <u>Know</u>. Boston, MA: Harvard Business Press.

De Massis, A., J. H. Chua, et al. (2008). "Factors Preventing Intra-Family Succession." <u>Family Business</u> <u>Review</u> **21**(2): 183-199.

Dean, A. and M. Kretschmer (2007). "Can ideas be capital? Factors of production in the postindustrial economy: a review and critique." <u>Academy of Management Review</u> **32**(2): 573-594.

Dreux, D. R. (1990). "Financing Family Business: Alternatives to Selling Out or Going Public." <u>Family</u> <u>Business Review</u> **3**(3): 225-243.

Eijk, R. P. v. d., R. H. Flören, et al. (2004). <u>Financiering van de bedrijfsoverdracht binnen</u> <u>familiebedrijven</u>. Deventer, The Netherlands: Kluwer.

Eurostat (2008). NACE Rev. 2 Statistical classification of economic activities in the European Community. <u>Methodologies and Working papers</u>. Luxembourg, Luxembourg.

Fama, E. F. and M. C. Jensen (1983). "Separation of Ownership and Control." <u>Journal of Law and</u> <u>Economics</u> **26**.

Family Business Institute. "Succession Planning: Make it a Process Not an Event." Retrieved July, 2011, from <u>http://www.family-business-experts.com/succession-planning.html</u>.

FBN International (2008). Family Business International Monitor, FBN International.

Fetanat, A. and M. F. Naghian (2010). "A trust model in sensemaking process." <u>International journal</u> <u>of Computational Cognition</u> **8**(2): 1-3.

Flören, R. (2003). Opvolging in eigendom bij familiebedrijven: eerder een kans dan een recht. Breukelen, The Netherlands, Universiteit Nyenrode; Center for Entrepreneurship.

Flören, R., L. Uhlaner, et al. (2010). Family Businesses in the Netherlands Characteristics and Success Factors. Breukelen, The Netherlands, Centre for Entrepreneurship, Nyenrode Business Universiteit.

Flören, R. H. (1997). Een nieuwe generatie in het familiebedrijf. Breukelen, The Netherlands, Nyenrode Centre for Entrepreneurship en Walgemoed Accountants & Adviseurs.

Flören, R. H. (1998). "The Significance of Family Business in the Netherlands." <u>Family Business Review</u> **11**(2): 121-134.

Flören, R. H. (2002). Crown princes in the clay. Assen, The Netherlands: Royal Van Gorcum.

Flören, R. H., M. M. Berent-Braun, et al. (2011). Familiebedrijven in Zeeland. <u>Onderzoeksrapport</u>. Breukelen, The Netherlands, Business Universiteit Nyenrode.

Flören, R. H. and S. F. Jansen (2005). <u>De emotionele waarde van het familiebedrijf</u>. Deventer, The Netherlands: Kluwer Fiscale en Financiële Uitgevers.

Flören, R. H. and S. F. Jansen (2007). <u>Ondernemerschap en het familiebedrijf</u>. Deventer, The Netherlands: Kluwer.

Flören, R. H. and E. E. Karssing (2000). "Goed-versus-goed dillemma's en de opvolgingsparadox in familiebedrijven." <u>Tijdschrift voor Management & Organisatie</u> **54**(1): 45-62.

Flören, R. H. and E. J. Wijers (1996). <u>Handboek van het familiebedrijf</u>. Breukelen, The Netherlands: Nyenrode University.

Gallo, M. Á., J. Tàpies, et al. (2004). "Comparison of Family and Nonfamily Business: Financial Logic and Personal Preferences." <u>Family Business Review</u> **17**(4): 303-318.

Gallo, M. A. and A. Vilaseca (1996). "Finance in Family Business." <u>Family Business Review</u> **9**(4): 387-401.

Geerlings, J. R. (2005). Het opvolgingsproces. <u>Ondernemerschap en ondernemen. De ondernemer</u> <u>centraal</u>. W. Burggraaf, Flören, R.H., Kunst, J.V.M. Zwolle, Netwerk Pers.

Gersick, K. E., J. A. Davis, et al. (1997). <u>Generation to Generation: Life Cycles of the Family Business</u>. Boston, MA: Harvard Business School Press.

Geus, A. d. (1997). <u>The living company: Habits for survival in a turbulent business environment</u>. Boston, MA: Harvard Business School Press.

Ghingold, M. and B. Johnson (1997). "Value Added in Business Markets: Implications for Procurement and Marketing."<u>Industrial Marketing Management</u> **26**: 271-280.

Grant, K. A. (2007). "Tacit Knowledge Revisited - We Can Still Learn from Polanyi." <u>The Electronic</u> Journal of Knowledge Management **5**(2): 173 - 180.

Grant, R. M. (1996). "Toward a Knowledge-Based Theory of the Firm." <u>Strategic Management Journal</u> **17**(Winter Special Issue): 109-122.

Habbershon, T. G. and M. L. Williams (1999). "A Resource-Based Framework for Assessing the Strategic Advantages of Family Firms." <u>Family Business Review</u> **12**(1): 1-25.

Hair, J. F., B. Black, et al. (2005). Multivariate Data Analysis. Upper Saddle River, NJ: Prentice Hall.

Handler, W. C. (1989a). "Methodological Issues and Considerations in Studying Family Businesses." <u>Family Business Review</u> **2**(3): 257-276.

Harris, J. (2007). Business Succession Strategies That Work. Accounting Technology. April ed.: 20-21.

Harvey, M. and R. Evans (1995). "Life After Succession in the Family Business: Is It Really the End of Problems?" <u>Family Business Review</u> **8**(1): 3-16.

Hoe, S. L. (2006). "Tacit Knowledge, Nonaka and Takeuchi SECI model and informal knowledge processes." <u>International Journal of Organization Theory and Behavior</u> **9**(4): 490-502.

Hulshoff, H. (2001). Strategic Study; Family business in the Dutch SME-sector, Definition and characteristics. Zoetermeer, the Netherlands, EIM Business and Policy Research.

Ibrahim, N. A., J. P. Angelidis, et al. (2008). "Strategic Management of Family Businesses: Current Findings and Directions for Future Research." <u>International Journal of Management</u> **25**(1): 95-110.

IFERA (2003). "Family Businesses Dominate." Family Business Review 16(4): 235-240.

Institute for Family Business (2008). Family Business Management Perspectives: Succession. London, UK, Institute for Family Business (UK). **1**.

Jakubik, M. (2007). "Exploring the knowledge landscape: four emerging views of knowledge." <u>Journal</u> <u>of Knowledge Management</u> **11**(4): 6-19.

Jashapara, A. (2004). <u>Knowledge management: an integral approach</u>. Harlow, UK: Pearson Education Limited.

Jones, G. and J. Zeitlin (2008). <u>The Oxford Handbook of Business History</u>. Oxford: Oxford University Press.

Kaye, K. (1996). "When the Family Business Is a Sickness." Family Business Review 9(4): 347-368.

Kenyon-Rouvinez, D. and J. L. Ward (2005). <u>Family business; Key issues</u>. New York, NY: Palgrave Macmillan.

Kets de Vries, M. F. R. (1993). "The dynamics of family controlled firms: The good and the bad news." <u>Organizational Dynamics</u> **21**(3): 59-71.

Keuning, D. and D. J. Eppink (2000). <u>Management & Organisatie: Theorie en Toepassing</u>. Houten, The Netherlands: Educatieve Partners Nederland BV.

Kidd, J. B. (2001). "Discovering inter-cultural perceptual differences in MNEs." <u>Journal of Managerial</u> <u>Psychology</u> **16**(2): 106-126.

Klein, S. B. (2000). "Family Businesses in Germany: Significance and Structure." <u>Family Business</u> <u>Review</u> **13**(3): 157-181.

Lansberg, I. (1988). "Family business as an emerging field." <u>Family Business Review</u> 1(1): 1-8.

Lee, J. (2006). "Family Firm Performance: Further Evidence." <u>Family Business Review</u> **19**(2): 103-114.

Lockwood, N. R. (2007). Leveraging Employee Engagement for Competitive Advantage: HR's Strategic Role. <u>SHRM Research Quarterly</u>.

Longenecker, J. G. and J. E. Y. J. Schoen (1978). "Management succession in the family business." Journal of Small Business Management **16**(3): 1-6.

Mandl, I. (2008). Overview of Family Business Relevant Issues - Final Report. Vienna, Austria, Austrian Institute for SME Research.

McClave, J. T., P. G. Benson, et al. (2008). <u>Statistics for Business & Economics</u>. Upper Saddle River, NJ: Pearson Education Inc.

McConaughy, D. L. (2000). "Family CEOs vs. Nonfamily CEOs in the Family-Controlled Firm: An Examination of the Level and Sensitivity of Pay to Performance." <u>Family Business Review</u> **13**(2): 121-131.

Meijaard, J. (2005). Business transfer in the Netherlands. <u>Entrepreneurship in the Netherlands;</u> <u>Business transfer: a new start</u>. Y. H. a. J. Snijders. Zoetermeer, EIM Business & Policy Research: 17-29.

Meijaard, J. and B. J. Diephuis (2004). Bedrijfsoverdrachten in het MKB. Zoetermeer, The Netherlands, EIM Onderzoek voor Bedrijf & Beleid: 5.

Meijaard, J., L. Uhlaner, et al. (2005). The relationship between successor and planning characteristics and the success of business transfer in Dutch SMEs. <u>SCALES-paper</u> Zoetermeer, The Netherlands, EIM Business and Policy Research: 20.

Menon, T. and J. Pfeffer (2003). "Valuing Internal vs. External Knowledge: Explaining the Preference for Outsiders." <u>Management Science</u> **49**(4): 497-513.

Merriam-Webster Dictionary (2011). "Technology". Merriam-Webster Dictionary.

Mishra, J. K. (2009). <u>Knowledge Management: Complexity, Learning & Sustainable Innovation</u>. New Delhi, India: Global India Publications Pvt Ltd.

Montgomery, D. C. and G. C. Runger (1999). <u>Applied statistics and probability for engineers</u>. New York, NY: John Wiley & Sons.

Morris, M. H., R. O. Williams, et al. (1997). "Correlates of success in family business transitions." Journal of Business Venturing **12**(5): 385-401.

Nonaka, I. and N. Konno (1998). "The Concept of "Ba": Building a Foundation for Knowledge Creation." <u>California Management Review</u> **40**(3): 40-54.

Nonaka, I. and H. Takeuchi (1995). "The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation." <u>University of Illinois at Urbana-Champaign's Academy for</u> <u>Entrepreneurial Leadership Historical Research Reference in Entrepreneurship</u>.

OECD (2007). OECD Science, Technology and Industry Scoreboard 2007: OECD Publishing.

Oxford English Dictionary (2011). "Technology". Oxford English Dictionary, Oxford University Press.

Pallant, J. (2005). SPSS survival manual. New York, NY: McGraw-Hill.

Plantefève-Castryck, J. (2010). Rivaliteit en conflicten als een bedreiging voor de opvolging door een team in de Vlaamse familiaal gerunde KMO. <u>Faculteit Economie en Bedrijfskunde</u>. Gent, Belgium, Universiteit Gent. **Master in de bedrijfseconomie**.

Polanyi, M. (1966). <u>The Tacit Dimension</u>. London, UK: Routledge and Kegan Paul.

PricewaterhouseCoopers (2008). Making a difference, The PricewaterhouseCoopers Family Business Survey 2007/08.

Radford, B. (2009). "The truth behind secret recipes in Coke, KFC, etc.". from <u>http://www.livescience.com/5517-truth-secret-recipes-coke-kfc.html</u>.

Ramanathan, K. (1994). "The polytrophic components of manufacturing technology." <u>Technological</u> <u>Forecasting and Social Change</u> **46**(3): 221-258.

Reynaldo, J. and A. Santos (1999). "Cronbach's Alpha: A Tool for Assessing the Reliability of Scales." <u>Extension Information Technology</u> **37**(2).

Schatzberg, E. (2006). "Technik Comes to America: Changing Meanings of Technology before 1930." <u>Technology and Culture</u> **47**(3): 486-512.

Shanker, M. C. and J. H. Astrachan (1996). "Myths and Realities: Family Businesses' Contribution to the US Economy— A Framework for Assessing Family Business Statistics." <u>Family Business Review</u> **9**(2): 107-123.

Sharma, P. (2004). "An Overview of the Field of Family Business Studies: Current Status and Directions for the Future." <u>Family Business Review</u> **17**(1): 1-36.

Sharma, P., J. J. Chrisman, et al. (1997). "Strategic Management of the Family Business: Past Research and Future Challenges." <u>Family Business Review</u> **10**(1): 1-35.

Sharma, P., J. J. Chrisman, et al. (2001). "Determinants of initial satisfaction with the succession process in family firms: a conceptual model." <u>Leadership</u> **25**(3): 17-35.

Smith, E. A. (2001). "The Role of Tacit and Explicit Knowledge in the Workplace." <u>Journal of Knowledge Management</u> **5**(4): 311-321.

StatSoft Inc. (2011). Electronic Statistics Textbook. Tulsa, OK, StatSoft.

Stavrou, E. T. and P. M. Swiercz (1998). "Securing the Future of the Family Enterprise: A Model of Offspring Intentions to Join the Business." <u>Entrepreneurship Theory and Practice</u> **23**(2).

Svetina, A. C. and I. Prodan (2008). "How Internal and External Sources of Knowledge Contribute to Firms' Innovation Performance." <u>Managing global transitions</u> **6**(3): 277-299.

Szulanski, G. (1996). "Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm." <u>Strategic Management Journal</u> **17**(ArticleType: research-article / Issue Title: Special Issue: Knowledge and the Firm / Full publication date: Winter, 1996 / Copyright © 1996 John Wiley & Sons): 27-43.

Tagiuri, R. and J. Davis (1996). "Bivalent Attributes of the Family Firm." <u>Family Business Review</u> **9**(2): 199-208.

Tanriverdi, H. (2005). "Information Technology Relatedness, Knowledge Management Capability, and Performance of Multibusiness Firms." <u>MIS Quarterly</u> **29**(2): 311-334.

Teeffelen, L. v. (2010). Exploring Success and Failure in Small Firm Business Transfers. <u>Nyenrode</u> <u>Research and Innovation Institute</u>. Breukelen, The Netherlands, Nyenrode Business Universiteit. **PhD degree**.

Trevinyo-Rodríguez, R. N. and N. Bontis (2010). "Family ties and emotions: a missing piece in the knowledge transfer puzzle." Journal of Small Business and Enterprise Development **17**(3): 418-436.

Tripathy, J. K., N. K. Patra, et al. (2007). "Levering Knowledge Management: Challenges for the Information Professional." <u>DESIDOC Bulletin of Information Technology</u> **27**(6): 65-73.

Uhlaner, L. M., E. Dekker, et al. (2003). De ondernemer in het familiebedrijf. <u>Handboek Ondernemers</u> <u>en Adviseurs: Management en Economie van het Midden- en Kleinbedrijf</u>. P. A. Risseeuw and A. R. Thurik. Deventer, The Netherlands, Kluwer: 279-299.

United Nations (2008). International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4. <u>Statistical Papers</u>. D. o. E. a. S. Affairs. New York, NY, United Nations.

Vakil, T. (2005). "An exploratory Model for Studying Rhetorical Strategies during Organizational Change." <u>Variegations</u> **2**(72-83).

Verburg, R. (2010). Knowledge management and R&D management, Delft University of Technology.

Werquin, P. (2010). <u>Recognising Non-Formal and Informal Learning: Outcomes, Policies and</u> <u>Practices</u>. Paris, France: OECD Publishing.

Westhead, P. (1997). "Ambitions, external environment and strategic factor differences between family and non–family companies." <u>Entrepreneurship & Regional Development: An International</u> Journal **9**(2): 127 - 158.

Wortman, M. S. (1994). "Theoretical Foundations for Family-Owned Business: A Conceptual and Research-Based Paradigm." <u>Family Business Review</u> **7**(1): 3-27.

Xu, B., S. S. Chaudhry, et al. (2009). "Factors of production: Historical theories and new developments." <u>Systems Research and Behavioral Science</u> **26**(2): 219-224.

Zack, M., J. McKeen, et al. (2009). "Knowledge management and organisational performance: an exploratory analysis." Journal of Knowledge Management **13**(6): 392-409.

Zahra, S. A., D. O. Neubaum, et al. (2007). "Knowledge sharing and technological capabilities: The moderating role of family involvement." Journal of Business Research **60**: 1070-1079.

# APPENDIXES

APPENDIX I: SCREENING QUESTIONS
Screening questions family business (6)
FO1a:
Could you please indicate which percentage of the company is owned by one family?
F02:
Is the following applicable to your company?
One family has considerable influence on the strategy of the company.
1: Yes
2: No
If [FO1b > 1 OR FO1a ≤ 50%] AND [FO2 > 1], go to Closing.
F03:
How many managers does your company have, including yourself?
FO4:
And how many of these managers are family of the owner or owners?
KR2:
Can you indicate whether you are:
1: Unly owner of the company?
2: Co-owner?
3: No owner?
KR4:
Are you family of the owner or owners of the company?
1: Yes, I am family of the owner(s)
2: NO, I am not family of the owner(s) $F_{1}^{(2)} = F_{1}^{(2)} = F_$
IF [FO1a≤ 50% OR FO1b=1] AND [FO2=1] AND [FO4/FO3 <50% OR FO4<2 OR KR4 >1], go to closing. IF [FO1a≤ 50% OR FO1b>1] AND [FO2=1] AND [FO4/FO3 <50% OR FO4<2 OR KR4 >1], go to closing.
Screening questions succession (4)
BO1a:
Could you please indicate in what year the last transfer of management took place?
99999995: A transfer in management never took place yet, I am the founder.
BO1b:
IF BO1a is: I don't know.
Was the last transfer in management less than 5 years ago?
1: Yes
2: No
BO4a:
When do you expect to next transfer in management to take place?
IF BU4a IS: I aon't know.
will management be transferred within the coming / years?
2. NU
IF [DU14 < 2006 UK BU1D IS >1] AND [BU48>2018 UK BU4D >1], go to ciosing.

# APPENDIX II: LIST OF VARIABLES

Variable	Question	Scale
Control variables		
Sector	None	The agency in charge of conducting the surveys linked the respondents answer with the SBI 2008 code belonging to their organization according to the registration at the Chamber of commerce. The codes were recoded into 0 = non-technical and 1 = technical according to the division provided in Appendix III: Classification of sectors for the sample.
Firm size	How many people - including yourself and other family employees – are currently working in the company? This excludes temporary employees.	Respondents could indicate the number of employees.
Dependent variables		
Financial performance Cronbach alpha = .776	A scale was created from averaging the answers of the respondents on the following questions: How would you describe the profitability of the company last year? When you compare the turnover of the company in the year prior to the transfer with the year after the transfer, did the turnover When you compare the profitability of the company in the year prior to the transfer with the year after the transfer, did the profitability	The scale for the first item: 1 = Very profitable, 2= Profitable, 3 = Somewhat profitable, 4 = Break even, 5 = Somewhat unprofitable, 6 = Unprofitable, 7 = Very unprofitable The scale for the last two items: 1 = Strongly increase (10% or more), 2 = Increase (between 5 and 10%), 3 = Almost stay the same (between -5 and +5%), 4 = Decrease (between -5 and - 10%), 5 = Strongly decrease (- 10% or more)

Variable	Question	Scale
Organisational change Cronbach alpha = .808	To what extent did the situation in the following areas change when comparing the situation prior to the transfer with the situation after the transfer? Type of products or services offered by the company Technical aspects of the products or services offered by the company Customers and suppliers database Overall strategic goals of the company	A scale was created from averaging the answers the respondents gave for each of the four items. The scale for each item was: 1 = Changed to a large extent, 2 = Changed, 3 = Somewhat changed, 4 = Hardly changed, 5 = Not changed at all
Independent variables		
Knowledge transfer practices	Please indicate to what extent the following methods were used to transfer knowledge between predecessor and successor? Informal conversation Visiting the customers and suppliers together Formal methods (e.g. documents, computer files) Managing the daily activities of the company together.	The scale for each item was: 1= very frequently used, 2 = frequently used, 3 = sometimes used 4 = hardly used, 5 = not used at all A new variable was created by recoding the answers into: 0 = not used (answers 3 to 5), 1 = used (answers 1 and 2)
Extent of knowledge transfer	To what extent is the	A scale was created from
Cronbach alpha = .935	knowledge transferred between predecessor and successor on the following areas? Market Customers and suppliers Internal organisational processes Technical knowledge of products and services offered by the company	averaging the answers the respondents gave for each of the four items. The scale for each item was: 1= Completely transferred, 2 = transferred to a large extent, 3 = Somewhat transferred, 4 = Hardly transferred, 5 = Not transferred at all.
Interaction variables		
Duration of succession	How long did the total succession process (from the first thought until the actual transfer) take?	Respondents could indicate the amount of years.
Education	What is the area of your study?	Respondents could choose one or more of the following categories: 1 = Technical study 2 = Management study, 3 = Other

Variable	Question	Scale
Work experience	A scale was created by summation of the answers of the following items: How many years of work experience did the successor have <u>inside</u> the family business before the transfer took place? How many years of work experience did the successor have <u>outside</u> the family business before the transfer took place?	Respondents could indicate the number of years.

APPENDIX	III:	CLASSIFICATION	OF	SECTORS	FOR	THE SAMPLE
		CLASSIFICATION	01	JECTORS	101	

SBI code of respondent in sample	Number of respondents	Sector	Technical (T) or non- technical (NT)
0111	1	Agriculture and hunting activities	NT
011301	1	Agriculture and hunting activities	NT
0321	1	Fishery	NT
2369	1	Manufacturing	Т
2370	1	Manufacturing	Т
2511	1	Manufacturing	Т
2822	1	Manufacturing	Т
2896	1	Manufacturing	Т
4120	2	Construction	Т
432101	2	Construction	Т
45112	2	Car repair	Т
45204	1	Car repair	Т
45311	1	Warehouse and retail	NT
46212	1	Warehouse and retail	NT
4635	1	Warehouse and retail	NT
4645	1	Warehouse and retail	NT
46471	1	Warehouse and retail	NT
4651	1	Warehouse and retail	NT
466501	1	Warehouse and retail	NT
46694	1	Warehouse and retail	NT
46712	1	Warehouse and retail	NT
4711	4	Warehouse and retail	NT
4721	1	Warehouse and retail	NT
4742	1	Warehouse and retail	NT
47525	2	Warehouse and retail	NT
47593	1	Warehouse and retail	NT
47597	1	Warehouse and retail	NT
47711	1	Warehouse and retail	NT
47721	1	Warehouse and retail	NT
47741	1	Warehouse and retail	NT
47762	1	Warehouse and retail	NT
4777	1	Warehouse and retail	NT
47789	1	Warehouse and retail	NT
4932	2	Transport	NT
4941	6	Transport	NT
55101	2	Hospitality industry	NT
55102	1	Hospitality industry	NT
5530	1	Hospitality industry	NT
56101	3	Hospitality industry	NT
56102	2	Hospitality industry	NT
6420	4	Financial services	NT
64303	1	Financial services	NT

Family businesses and knowledge transfer

SBI code of respondent in sample	Number of respondents	Sector	Technical (T) or non- technical (NT)
6622	2	Financial services	NT
6810	1	Real estate	NT
69101	1	Legal services	NT
69201	1	Legal services	NT
711207	1	Architects	Т
742012	1	Industrial design	Т
78201	1	Employment agency	NT
85592	1	Education	NT
93193	1	Sport and recreation	NT
96012	1	Other services	NT
96021	1	Other services	NT

#### APPENDIX IV: MY PERSONAL MOTIVATION FOR THIS RESEARCH

About 35 years ago Jan Piet Warnar was working as a sales manager at Worthington, an American manufacturer of standard industrial compressors. Their products were mainly sold to manufacturing plants, chemical plants and petrochemical plants. In the 1970's several accidents with oil spills had taken place and new regulations were established to protect the people and environment of anymore contamination. Industries were forced to increase safety measures and as a result the market demand changed. As a sales manager Warnar noticed these developments and advised the management their products needed to be changed. He saw a future where customers would request a more specialized product instead of the standard mass production they were offering now. When management did not agree, Warnar quit his job and started his own company: Airpack.

With Airpack Warnar established a company that would provide their customers with products made according to their specifications instead of the standard products others were offering the market. Airpack is not a manufacturer of compressors, but rather a manufacturer of packages. A package is designed, assembled and installed by Airpack and can include either a compressor, dryer or nitrogen generator or all of the previous together. These packages are turn-key, they only have to be hooked up to utilities available at site and one push on the button is enough for the package to start working automatically. This idea to serve the market in another way turned out to be a good one. The company was established in 1978 and now almost 33 years later Airpack is a globally active corporation with almost 70 employees. Most of the products are supplied to the oil and gas industry and distributed all over the world to countries including Iran, UAE, Algeria, Kazakhstan, New Zealand and India. Their customers list exists of well-known names like Shell, BP, Total and ExxonMobil and is still expanding.

When the company was started Jan Piet already had two daughters and in 1982 the third daughter was born. During holidays all three children worked in the company and as they grew moved from paint duty and copying to more complex jobs. The oldest went on to study economics, the middle child studied for teacher in primary school while the youngest studied technical business administration followed by mechanical engineering. The oldest two children choose their careers outside the company; the youngest however, did not.

The youngest girl in the family is me. I am the crown princess of the family business and have decided to follow in my father's footsteps. Although I am currently still finishing my master's degree, preparations for succession are well underway. Since 7 years our family has been planning the succession and ownership has already been transferred. This makes us different from the average Dutch firm who plan their transfer only 1 to 1.5 years in advance [Flören, Uhlaner et al., 2010]. Succession is a critical stage and especially in family businesses emotional aspects also come to play due to the involvement of the family system [Flören and Jansen, 2005]. During these 7 years our family has experienced that planning for succession and the process itself is not easy. Accountants can help with transfer of ownership and all legal and fiscal aspects involved. But how do you transfer management? Where do you start? What are the phases in the process? What knowledge needs to be transferred? These are all questions we as a family who are in the middle of the succession in management process have and are still struggling with.

These personal experiences have motivated me to conduct a research into the succession process in the family business. We as a family found it especially difficult to plan for the transfer of management and to make sure the knowledge from my father is passed on to me. During the 34 years that my father managed the family business he acquired a large amount of knowledge which is an important contribution to the continuity of our family business. Cabrera-Suarez, et al. [2001, p. 39] even argue that the "family firm's specific knowledge, as well as the ability to create and transfer it, are considered a key strategic asset that may be positively associated with higher level of performance." However, the empirical research to support this claim is lacking. Because of my interest in the topic, the lack of empirical research on this topic and affinity with technology, the current study was aimed at finding the relationship between knowledge transfer of predecessor to successor and the post-transfer performance in technical family businesses.